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PHYLLIS BARCLAY-SMITH, M.B.E.

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AVICULTURAL MAGAZINE



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Cabot's Tragopan

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

Vol. 69.—No. 1.—*All rights reserved.* **JANUARY–FEBRUARY, 1963**

CABOT'S TRAGOPAN

(*Tragopan caboti*)

By PHILIP WAYRE (Norwich, England)

The genus Tragopan consists of five species and two sub-species. Of these, three species are at present in the Trust's collection. Satyr *Tragopan satyra*, Temminck's *Tragopan temminckí* and Cabot's *Tragopan caboti*. The last two species have again been bred this year. Cabot's Tragopan is not quite so brightly coloured as the other two, having less red in its plumage ; the general appearance of the male being pale buff, spotted with black and a tinge of red. The crest and the sides of the neck are orange-red and the facial skin orange-yellow, giving the head an altogether paler and more orange look than the other species. The hen Cabot's is very similar to the hen Temminck's except that the breast is paler and more heavily streaked with whitish feathers.

Much has been written about breeding and rearing Tragopans but in many instances authors have merely re-hashed accounts of breedings which have taken place at the beginning of the century. Feeding-stuffs and rearing methods have changed considerably in the last decade and some of the old beliefs are no longer true so that an up-to-date account of breeding Cabot's in the Trust's collection may not be out of place.

Five males and two females of this species were imported from China in the winter of 1960 as previously reported (AVICULTURAL MAGAZINE, Vol. 67, No. 1). Both hens laid the following summer but, unfortunately, only one male survived the journey, quarantine and the subsequent change of environment. Despite a choice of elevated nest-boxes and baskets in their enclosures both these hen Cabot's made their nests on the ground underneath shrubs. Three young were reared from three eggs produced by the pair, two of the young surviving to maturity, both being hens. Last summer the same adult pair laid four eggs in their first clutch and from these four young were reared. Unfortunately one died when nearly five months old and proved to be a male, the remaining three all appear to be females. The nest in 1962 was in precisely the same spot under a shrub as in the previous year.

Adult Cabot's are very arboreal, spending much time in trees and shrubs when not actually feeding, but it is interesting that these two wild-caught hens both nested on the ground despite a choice of elevated nest-boxes. This has not often been the case before, judging from old accounts of breeding this species.

The eggs took twenty-nine days to hatch under a bantam and the chicks were easily reared. It has often been stated that Tragopan chicks do not eat much for the first two days, but this is common to all pheasants. The young Cabot's were brought up from the start on a proprietary brand of pheasant-starter crumb, with a little finely chopped lettuce and grated hard boiled yolk of egg scattered over the crumbs for the first three weeks. Live maggots were also given daily from the start. In common with other Tragopans the Cabot's chicks need to be given heat of some kind until they are two months old, especially at night.

All the brooders containing young pheasants are moved daily across a freshly mown lawn, but no other green food is fed to young Tragopans except the chopped lettuce mentioned above.

While Cabot's have not in the past proved easy to keep or to rear it is to be hoped that with modern conditions and feeding it will be possible to build up a sound stock of this rare species. Perhaps two of the most important points are to give them plenty of space with large runs and to refrain from feeding corn of any kind, since the males are liable to die of heart trouble or fits if allowed to become over-fat. A diet of turkey or pheasant breeders pellets and fruit with plenty of natural greenfood is essential.

* * *

ORNAMENTAL PHEASANT TRUST
ANNUAL REPORT 1962
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REPORT OF THE COUNCIL, 1962

The past year has been an important one in that for the first time part of the Trust's collection was open to the public.

As many Members are no doubt aware the continual growth of the collection with all that its maintenance entails, supported as it is by a limited income from subscriptions and donations, has become an increasing financial burden upon the Hon. Director. At the same time his private collection of birds and mammals has also continued to expand. During the year the scheme to develop some 26 acres of land at Gt. Witchingham, as mentioned in the 1961 Report, has been put into operation. A representative selection of the Trust's birds is now

on view to the general public within the new Wildlife Park. To accommodate these birds additional pens have been constructed ; these include a series of nine large open-topped pens each measuring 24 by 60 feet and containing an electrically heated Leckford hut for tropical species. In addition a range of smaller pens each measuring 40 by 20 feet with a central service passage has been erected. These pens are roofed with Ulstron (nylon) netting and each contains an unheated shelter.

The remainder of the Wildlife Park has been laid out to exhibit other birds and mammals. A chain of seven new pools for water birds has been constructed, the largest of these pools covering almost three-quarters of an acre. One of them is set aside for flamingoes and another for waders. The remainder accommodate a large variety of waterfowl. The original waterfowl gardens with their eight pools have also been included in the Park. Many large aviaries have been built for birds of prey and other birds, including a walk-thro' aviary housing British birds. A number of Macaws are at liberty with their headquarters in a fallen tree.

A Gatehouse comprising a shop, kitchen and tea-room has been built together with a block of public lavatories. Near the tea-room an enclosure of about an acre has been made in which a number of cock pheasants of various species are exhibited together with Wallabies and Soay sheep. This Pheasant Lawn has been planted with flowering shrubs and it is hoped to increase the cock birds on view to make a really fine show. It is significant that while comparatively few members of the public pay any serious attention to pens containing individual pairs of even rarities such as Bornean Great Argus or Cabot's Tragopan, they are impressed by this mixed collection of cock birds, especially as they are able to walk amongst them in the enclosure.

In addition to the birds there are over a dozen enclosures and pens containing mammals, and more are under construction.

The aim of the new Wildlife Park is not merely to provide a spectacle or to compete with existing Zoological Gardens, but to encourage the general public to take an interest in all forms of wild life and to impress upon them the need for conservation. For these reasons the theme at Great Witchingham is mainly upon showing British and European creatures under as near natural conditions as possible, with emphasis upon those species threatened with extinction in the wild.

While the public is charged for admission to the Park, Members of the Trust are always welcome at any time free of charge. This privilege has already resulted in a steady rise in membership, which now stands at eleven Life Members, five Sustaining Members, 193 Ordinary Members, making a total of 209. Needless to say members of the Trust are always welcome to inspect that part of the collection which remains outside the new Park.

The whole 26 acres of the Park has been enclosed with a vermin-proof galvanized netting fence of very heavy gauge. It is 8 feet high and has an overhang both inwards and outwards. This fence is almost a mile in length, and over ten tons of steel was used in the netting alone. At the time of going to press over 30,000 members of the general public have visited the Wildlife Park since it opened on 1st August.

Mr. Arthur Jennings of the School of Veterinary Medicine, Cambridge, has continued his valuable work in conducting post-mortem examinations and Mr. Barrow has kindly prepared several skins for the Trust's collection. Mr. John Wood, our veterinary surgeon, has given much of his time to the Trust's work. Your Council is extremely grateful to these gentlemen for their co-operation. Once again during the year samples of egg-white from infertile eggs have been sent to Cornell University, U.S.A. to help Professor Charles Sibley in his research into the taxonomic relationship of birds by means of electrophoresis of egg-white protein. The generous contribution made by Cornell University towards the mailing of these samples is gratefully acknowledged.

A number of infertile eggs and chicks which suffered early mortality were sent to the British Museum (Nat. Hist.) to strengthen their collection of rarer species of pheasants.

Twenty-one young Swinhoe's (*Lophura swinhoei*) were reared in the collection and negotiations are continuing with the Government of Formosa for the majority of these to be sent back to Formosa to be turned down in a protected area to reinforce the depleted wild stock of this species. The authorities there have intimated that their Government is about to pass an order protecting Swinhoe's Pheasants in Formosa. When this operation has been completed it will constitute what is perhaps the most significant achievement by the Trust to date. This will be one of the very rare occasions when the application of Aviculture has been directly instrumental in helping to save a species threatened with extinction in the wild.

A formal request has been made to the World Wildlife Fund for a grant towards the cost of packing and sending these birds by air to Formosa.

Your Council is pleased to report that Mr. R. E. Moreau of the Edward Grey Institute of Field Ornithology and President of the British Ornithologists' Union is about to conduct research into the relationship between Common Quail (*Coturnix c. coturnix*) and Japanese Quail (*Coturnix c. japonica*) and for this purpose four pairs of Common Quail have been specially imported from Spain. The generosity and assistance of Senor Alberto Duran of the Zoological Gardens, Jerez, who obtained these birds for the Trust is very much appreciated.

Early this spring a new rearing lawn was laid out. It is on a new ley and measures 35 by 40 yards and is surrounded by a small mesh wire

netting fence 4 feet high. A central electric power point has been installed capable of heating twenty-seven separate brooders. One dozen Leckford type brooders have been adapted to heating by electricity by means of installing heater elements. In addition some twenty smaller electric brooders are in use. After the age of seven to eight weeks the young birds are moved to a range of Whitlock fold units some sixty of which are on loan to the Trust.

At the request of the Royal Norfolk Agricultural Association a Wildlife exhibit was staged at the Royal Norfolk Show on 27th and 28th June. In addition to a number of British mammals and some birds of prey, three pens of ornamental pheasants were exhibited—these were Swinhoe's, Reeves's (*Syrmaticus reevesi*) and Blue Eared Pheasants (*Crossoptilon auritum*). They proved a great attraction and nearly 3,000 leaflets describing the aims of the Trust were distributed.

Importations

A total of thirteen birds has been imported during the past year as follows :—

	M.	*F.*
Vieillot's Crested Fireback . .	2	2
Malay Peacock Pheasant . .	2	–
Ferruginous Wood Partridge .	2	2
Mikado Pheasant . . .	2	1

The Vieillot's Crested Firebacks (*Lophura rufa*), Malay Peacock Pheasants (*Polyplectron bicalcaratum*) and Ferruginous Wood Partridge (*Caloperdix o. oculea*) were imported through the kindness of Dr. K. C. Searle of Hong Kong. It is thought to be the first time this beautiful Wood Partridge has been imported into this country. Both pairs have settled down well.

One male Mikado Pheasant (*Syrmaticus mikado*) was donated to the Trust by Drs. Dien Zuh-Ming and Liu Yen of Taiwan Museum. In the same consignment they sent a pair of Mikado Pheasants to our Member, Mr. A. J. Swain of Bedford. Mr. Swain most generously presented these two birds to the Trust. The collection has therefore been enriched by three wild-caught Mikados which, with any luck, should greatly increase our chances of saving this exceptionally rare species which is in grave danger of extinction in the wild. Your Council is most grateful to Mr. Swain for his kindness.

Drs. Dien Zuh-Ming and Liu Yen have been made Hon. Members of the Trust in recognition of their co-operation and help.

The Trust was able to help Mr. Newton Steel to import two more female Mikado pheasants from a dealer in Taipei.

Our Member, Mr. J. Rawlings of Holt, Norfolk, imported some Grey Francolin (*Francolinus afer swynnertoni*) from S. Rhodesia and presented one pair to the Trust, for which your Council is most grateful. Some Rock Partridge (*Alectoris graeca*) eggs were received from the

Chief Forest Officer in Cyprus. From these four chicks were successfully reared.

The following Zoos have kindly quarantined birds for the Trust :—

Belle Vue, Manchester—Mr. Legge
Paignton—Mr. Cahill

Without their help it would have been impossible to import any birds and your Council is extremely grateful for their co-operation.

Collection

The following is a list of eggs laid and young birds reared :—

	Eggs.	*Hatched.*	*Reared.*
Temminck's Tragopan	12	3	3
Cabot's Tragopan	8	4	4
Common Koklass	33	13	11
Tonkinese Red Junglefowl	26	9	3
Silver Pheasant	63	31	25
Swinhoe's Pheasant	42	25	21
Elliot's Pheasant	14	0	0
Mikado Pheasant	2	0	0
Reeves's Pheasant	48	17	10
Golden Pheasant	36	21	16
,, ,, yellow mutation	51	34	22
Lady Amherst's Pheasant	7	0	0
Common Peafowl	11	2	2
Rock Partridge (received from Cyprus)	16	5	5
Californian Crested Quail	93	51	40
Bobwhite Quail	23	12	7
	485	227	169

It will be observed no eggs were laid by Edwards's Pheasants (*Lophura edwardsi*) or Brown Crossoptilon (*Crossoptilon mantchuricum*) and very few by the Temminck's Tragopan (*Tragopan temminckii*). These are all old birds from the original Leckford collection and they must now be considered too old to be of any further use as breeding stock. This is all the more regrettable when it is remembered that none of these species has, as far as is known, been bred outside the Trust's collection this year. Unless fresh importations of these birds can soon be made they will doubtless quickly become extinct as captive species in this country.

One male Edwards's was bred by Mr. F. E. B. Johnson from a pair of the Trust's birds in his care.

For the second year running three Cabot's Tragopan (*Tragopan caboti*) were reared from the original pair sent by Dr. K. C. Searle and once again all appear to be hens.

Eleven young Common Koklass (*Pucrasia m. macrolopha*) were reared, two males and nine females, thus bringing the number of pairs in the collection to five.

Three young Tonkinese Red Junglefowl (*Gallus g. jabouillei*) were reared from the wild-caught birds imported from China.

Once again infertility continues to be the greatest single problem in building up a captive stock of any species. Continuous in-breeding over many generations is no doubt the cause in the majority of cases, but other factors must not be overlooked. For example, the wild caught pair of unrelated Cabot's Tragopan produced four eggs in their first clutch, all of which hatched. Their second clutch of three eggs were all infertile. The wild-caught Red Junglefowl laid four clutches, but only the first and third contained any fertile eggs. It would seem possible that in these cases the male was starting to lose breeding condition soon after the first clutch had been laid.

Some forty Californian Crested Quail (*Lophortyx c. californica*) and a number of Bobwhite Quail (*Colinus virginianus*) have been reared.

Two species new to the collection have recently been received in exchange from Mr. F. E. B. Johnson, these are a pair of Hume's Bar-tailed Pheasant (*Syrmaticus h. humiae*) and a pair of Sonnerat's Junglefowl (*Gallus sonnerati*). As described elsewhere in this report Mr. Johnson has successfully bred Hume's Bar-tailed Pheasant for the first time in this country and your Council is pleased to congratulate him.

Mr. Johnson has donated one pair of Swinhoe's pheasant to be included in the shipment for Formosa and Mr. J. Rawlings has donated three young Blue Crossoptilons. Their generosity is greatly appreciated.

The Trust's collection now consists of 378 birds, of forty-nine forms, excluding mutations. The following is a list of birds in the collection as at 1st December, 1962 :—

	M.	*F.*	*Total*
Satyr Tragopan (*Tragopan satyra*)	1	1	2
Temminck's Tragopan (*Tragopan temminckii*)	6	6	12
Cabot's Tragopan (*Tragopan caboti*)	1	5	6
Common Koklass (*Pucrasia m. macrolopha*)	6	9	15
Himalayan Monal (*Lophophorus impeyanus*)	3	0	3
Tonkinese Red Junglefowl (*Gallus g. jabouillei*)	3	2	5
Ceylon Junglefowl (*Gallus lafayettei*)	1	1	2
Sonnerat's Junglefowl (*Gallus sonnerati*)	1	1	2
Black-breasted Kalij (*Lophura leucomelana lathami*)	1	1	2
Silver Pheasant (*Lophura n. nycthemera*)	22	24	46
Edwards's Pheasant (*Lophura edwardsi*)	8	4	12
Swinhoe's Pheasant (*Lophura swinhoei*)	16	14	30
Lesser Bornean Crested Fireback (*Lophura i. ignita*)	—	2	2
Greater Bornean Crested Fireback (*Lophura ignita nobilis*)	1	2	3
Vieillot's Crested Fireback (*Lophura ignita rufa*)	1	2	3
Szechuan White Eared Pheasant (*Crossoptilon c. crossoptilon*)	—	1	1
Brown Eared Pheasant (*Crossoptilon mantchuricum*)	2	3	5
Blue Eared Pheasant (*Crossoptilon auritum*)	4	3	7
Elliot's Pheasant (*Syrmaticus ellioti*)	5	5	10
Mikado Pheasant (*Syrmaticus mikado*)	4	4	8
Hume's Bar-tailed Pheasant (*Syrmaticus h. humiae*)	1	1	2
Scintillating Copper Pheasant (*Syrmaticus soemmerringi scintillans*)	2	0	2
Reeves's Pheasant (*Syrmaticus reevesi*)	4	8	12
Southern Caucasus Pheasant (*Phasianus c. colchicus*)	1	1	2
Kirghiz Pheasant (*Phasianus colchicus mongolicus*)	1	1	2
Golden Pheasant (*Chrysolophus pictus*)	9	15	24
,, ,, ,, ,, *yellow mutation*	16	12	28

	M.	F.	Total
Lady Amherst's Pheasant (*Chrysolophus amherstiae*)	6	4	10
Bornean Great Argus (*Argusianus argus grayi*)	1	1	2
Indian Peafowl (*Pavo cristatus*)	4	6	10
Black-shouldered Peafowl (*Pavo cristatus var.*)	1	0	1
Indo-Chinese Green Peafowl (*Pavo muticus imperator*)	2	1	3
Malay Peacock Pheasant (*Polyplectron bicalcaratum*)	1	1	2
Roulroul Partridge (*Rollulus roulroul*)	2	0	2
Chinese Francolin (*Francolinus p. pintadeanus*)	1	0	1
Chinese Bamboo Partridge (*Bambusicola t. thoracica*)	2	0	2
Formosan Bamboo Partridge (*Bambusicola thoracica sonorivox*)	—	1	1
Bornean Tree Partridge (*Arborophila hyperythra*)	1	0	1
Stone Partridge (*Ptilopachus petrosus*)	1	0	1
Himalayan Chukor (*Alectoris graeca chukar*)	1	0	1
Painted Spurfowl (*Galloperdix lunulata*)	1	0	1
Rock Partridge (*Alectoris graeca*)	2	2	4
Indian Grey Partridge (*Francolinus pondicerianus*)	1	0	1
Chinese Painted Quail (*Excalfactoria chinensis*)	1	1	2
Californian Crested Quail (*Lophortyx c. californica*)	28	20	48
Bobwhite Quail (*Colinus virginianus*)	10	10	20
Ferruginous Wood Partridge (*Caloperdix oculea*)	2	2	4
Common Quail (*Coturnix c. coturnix*)	4	4	8
Scaled Quail (*Callipepla squamata*)	1	1	2
Grey Francolin (*Francolinus afer swynnertoni*)	1	1	2

P. L. W.

ORNAMENTAL PHEASANT TRUST—ANNUAL REPORT, 1962

ORNAMENTAL PHEASANT TRUST

STATEMENT OF ACCOUNTS FROM 31ST OCTOBER, 1961, TO 31ST OCTOBER, 1962

	£.	s.	d.		£.	s.	d.
Balance in hand	87	11	7	Purchases of Birds	493	9	8
Donation Hon. Director	150	0	0	Airfreight and Railway	95	8	11
Donations	77	1	6	Printing, etc.	87	8	8
Ordinary and Sustaining Membership Subscriptions	327	13	0	Labour and general maintenance	150	0	0
Sales of Birds	675	19	10	Bank Charges	1	1	0
				M.A. and N.R.	2	7	0
				Rings for pheasants	3	0	0
				Pheasant pens	484	12	7
				Loss on subscriptions paid in foreign currency		2	5
					1,317	10	3
				BALANCE IN HAND		15	8
	£1,318	5	11		£1,318	5	11

NOTES ON WING DISPLAY IN THE COURTSHIP OF PHEASANTS

By J. P. KRUIJT (Zoological Laboratory, Groningen, Netherlands)

Considering the courtship of Junglefowl, Beebe wrote as follows in his Monograph of the Pheasants : " The assertion has often been made and with some truth that some of the courtship attitudes are similar to those assumed in fighting. . . . This statement is now quoted and repeated in the most sweeping manner by every dilettante writer on birds. . . . The lateral display of Junglefowl has nothing to do with the fighting position of birds, which is essentially frontal. Even when two cocks are approaching one another and circling for an opening, the resemblance between the two motor phenomena is extremely remote."

Despite this strong denial, the idea of similarity between fighting and courtship patterns has continued to appear, and has now become firmly established. During the past ten years, Tinbergen and other ethologists have shown convincingly that in courting animals tendencies to attack, to flee, and to behave sexually are aroused simultaneously by the presence and activities of the partner. The animal cannot completely obey these tendencies all at the same time, because the motor patterns belonging to these tendencies are often partly or entirely incompatible. One of the ways in which courting animals solve their conflicts is to compromise : they show a little of the one and a little of the other tendency, so that in the end they do something in between.

The principle of compromise has proved to be extremely valuable for the understanding of courtship patterns even to such an extent that the remote resemblances mentioned by Beebe become meaningful and can no longer be ignored. In studying the courtship of Burmese Red Junglefowl (*Gallus g. spadiceus*) I came to the conclusion that it is applicable to this species also.

The cock which takes the initiative in a fight with another cock approaches the opponent with his body kept high and erect (Fig. 1A) and while jumping up at him, he flaps his wings vigorously (Fig. 1B). The loser of the fight runs away with his body kept low and flat, and his wings folded (Fig. 1A). Now when the two cocks are well matched, attack and escape are both aroused in each cock and the two tendencies keep each other in balance. In such a situation side display occurs (Fig. 1C). A cock in side display neither approaches, nor withdraws. He does something in between and circles around the opponent. While walking, the legs are often crossed : the nearest leg walks away

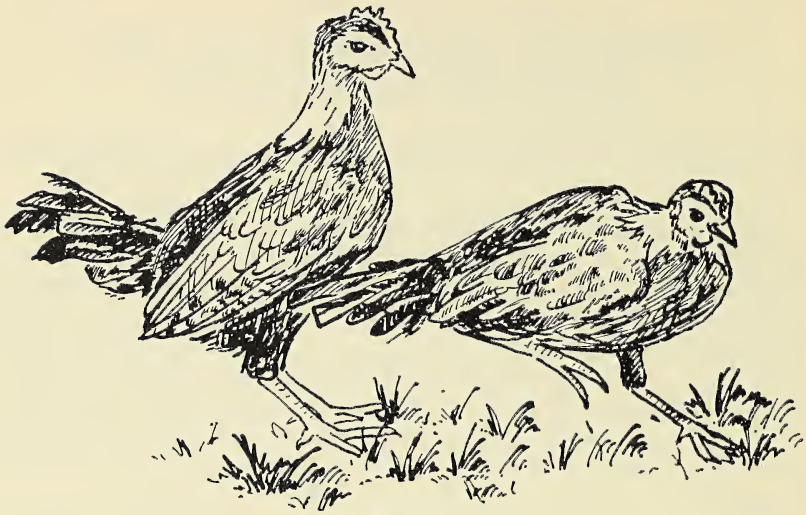


FIG. 1A

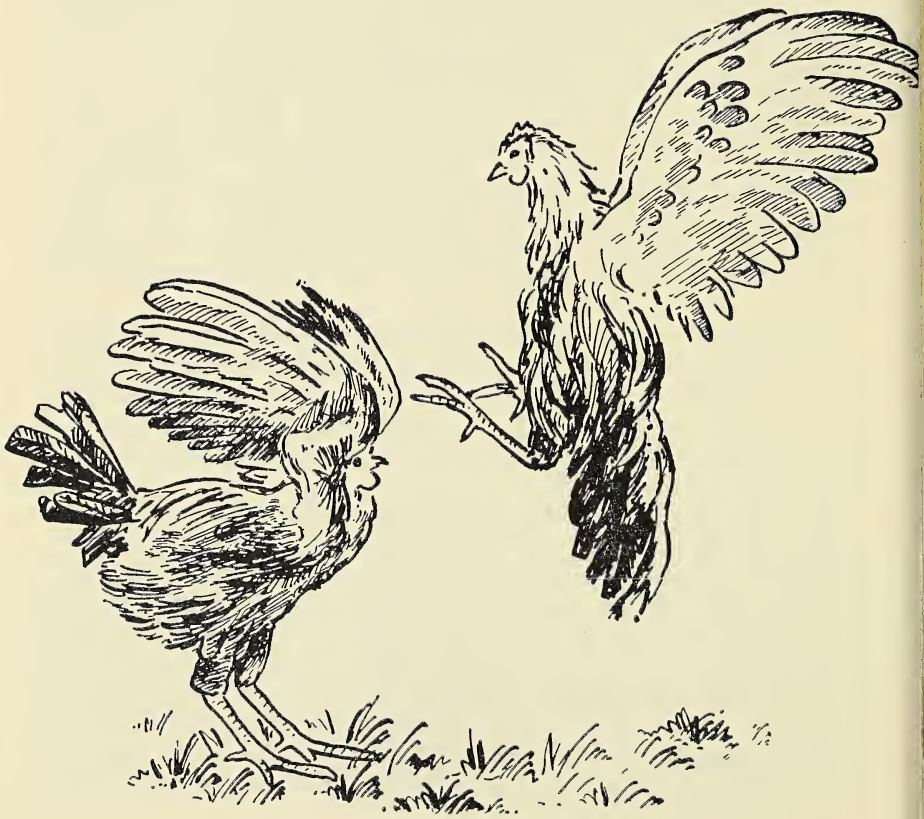


FIG. 1B

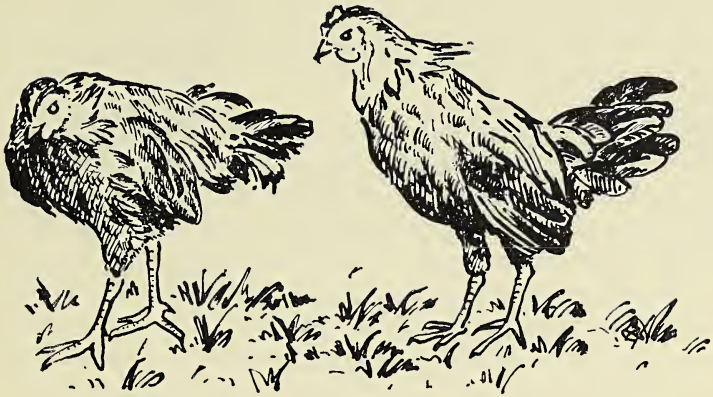


Fig. 1c

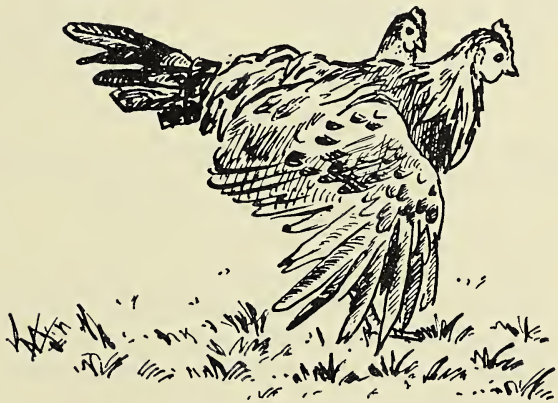


Fig. 1d

Fig. 1. Postures during fighting of cockerels of Burmese Red Junglefowl. Drawings by L. Hoekstra (after photographs).

and the leg on the far side walks toward the opponent. The body posture is oblique : the near side is held low as if the bird was fleeing and the far side is held high as if the bird was approaching to attack. All these components can be understood as compromises between attack and escape : the tendency to escape is expressed in the body-half nearest the opponent and the tendency to attack in the body-half further away.

Side display begins to be shown during fighting when the cockerels are two months old. At this age, side display is sometimes continued during a fight into a full waltzing or wing-flutter performance (Fig. 1D). This consists of close circling in side display, with a peculiar movement of the far wing superimposed. The far wing is kept tight against the body, but the hand of the wing is extended downward, so that the primaries are spread and touch the ground. The foot of that side steps through the extended primaries, producing a rasping sound. This movement (although I can not give the full arguments here) can again be understood as a compromise between attack and escape : upper and lower arm of the outer wing remain folded (as in escaping birds) and the hand is spread (as in the wing-flapping of attacking birds). All three parts remain folded in the nearest wing, which is consistent with the stronger escape expressed in this body-half.

Cockerels of two months old may also show incomplete attempts to copulate with other chicks. Side display and waltzing are never associated with this sexual behaviour ; they occur exclusively during fighting at this stage. With later age, side display and waltzing disappear to a great extent from the fighting context ; they are then mainly used in the courtship of the cock toward the female. The relations between courtship and fighting are then remote indeed, and it is very understandable that Beebe, who did not know the developmental history of these displays, denied a connexion.

Waltzing in adult Junglefowl functions as a signal during courtship. The oblique attitude of the cock results in a conspicuous display of the bright neck and saddle feathers. By his sudden circling and the rasping sound produced by the movements of the far leg through the lowered primaries, the cock stimulates the hen to crouch, after which copulation may follow.

In looking at the courtship of other pheasants, one finds that wing display is present in many species, but the form of it is often strikingly different. In most species it seems to function as a signal during courtship but, parallel to the differences in form, this effect is often achieved in different ways. I will give a few examples of wing display in other species.

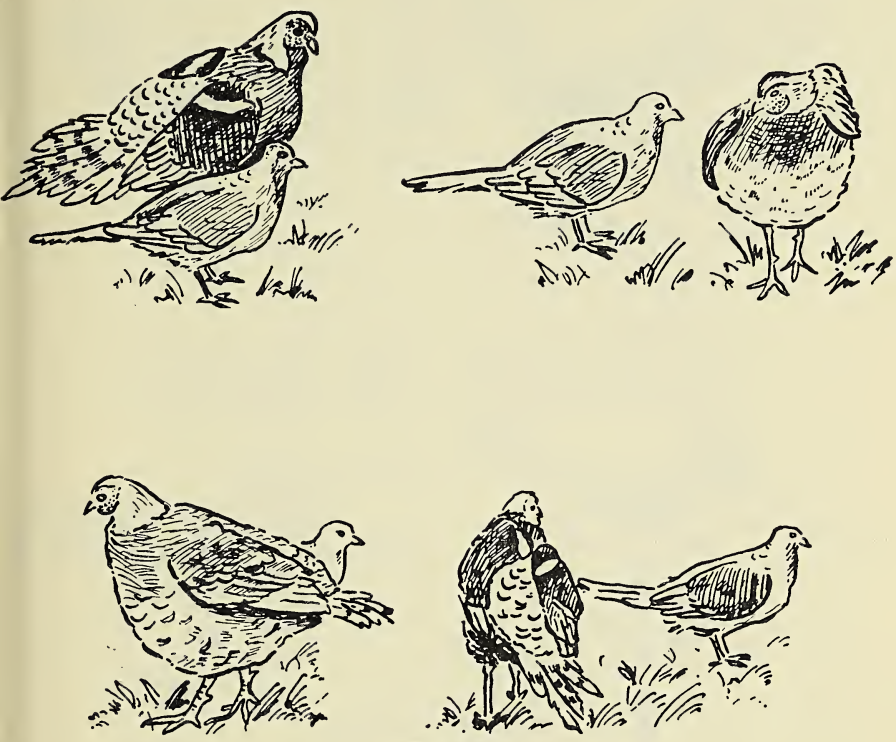


Fig. 2A

Fig. 2. Wing postures during courtship of various species of Phasianidae. Drawings by L. Hoekstra (after photographs and film). D is redrawn after R. D. Taber, *Condor*, 51, 1949, p. 157.

Elliot's Pheasant (*Syrmaticus ellioti*) : Fig. 2A.

The position of both wings in the lateral display of this species is strongly asymmetric. This is partly a result of the tilted back, but even if this factor is subtracted, the upper and lower arm of the far wing appear to be raised more than the corresponding parts of the nearest wing. I think that this is often so in Pheasants with asymmetric wing display, even when the primaries of either inner or outer wing are spread. It is also true, for example, of Junglefowl. In the Elliot's Pheasant, the white markings of the wings are beautifully emphasized by their position during display : it therefore seems probable that the display acts as a visual signal.

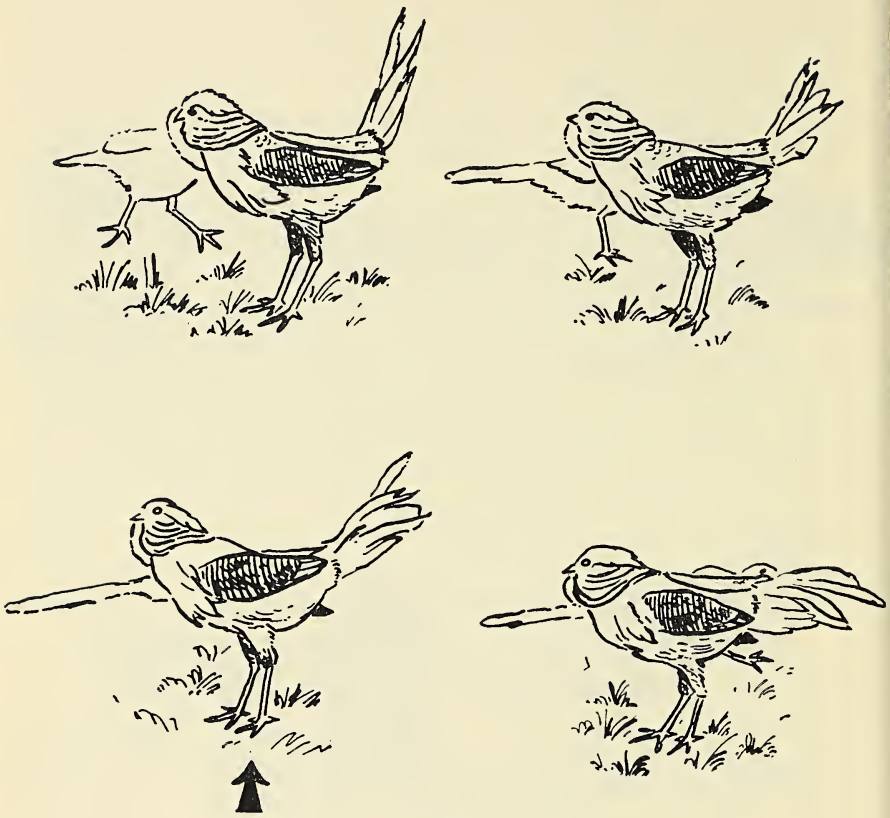


Fig. 2B

Golden Pheasant (*Chrysolophus pictus*) : Fig. 2B

The well known lateral display of this species depends mainly on the neck ruff, which is fanned out at the side of the female, but the wings also play their part in producing a highly conspicuous visual effect. The cock hops and runs around the female and the final display is adopted for only a second or so. During this brief moment the wings are brought in an asymmetrical position, essentially similar to that of Elliot's Pheasant. Here, however, the movement does not serve to emphasize structures on the wing itself, but lifting of the outer wing has the effect that the elongated, golden-coloured feathers of the back are pushed upward, permitting the female on the other side a full view. The climax of this display (see arrow in Fig. 2B) is synchronized with vocal hissing.



Fig. 2C

Reeves's Pheasant (*Syrmaticus reevesi*) : Fig. 2C

In this species the folded wings are again held asymmetrically during courtship. Side display may be adopted while the male is several metres from the female. He then suddenly hops sideways towards her and while hopping, the folded far wing is tilted upward, probably by a turning movement of the upper and lower arm. The visible surface of the cock as seen from the side is considerably increased by the position of the wings ; this probably makes the display potent as a visual signal.

Ring-necked Pheasant (*Phasianus colchicus torquatus*) : Fig. 2D

Here the wing display is very similar to that of the Junglefowl, but instead of the outer, the inner wing is lowered. I have seen this display,

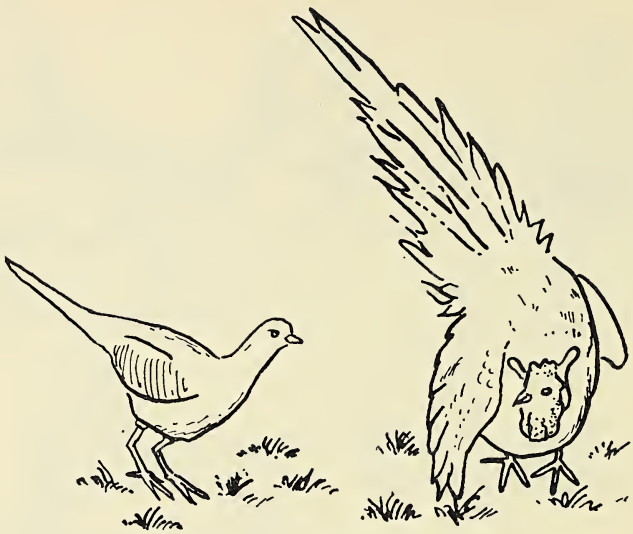


Fig. 2D

but at the time I was not yet aware of the importance of details. The drawing of Taber also does not permit detailed description, but it seems clear that the main movement is an extension of the primaries. The display probably acts as a visual signal, and again, the movement is accompanied with vocal hissing.

Painted Quail (*Excalfactoria chinensis*) : Fig. 2E

The outer wing is lowered during courtship of this species. The posture differs from waltzing of Junglefowl, however, in that not only the hand, but also the lower arm is completely extended. As a result, the wing is extended more backward than downward, and no sound-producing contact between the outer leg and wing is made. It is puzzling how this display could act as a signal : no conspicuous visual effect is produced either.

Another aspect of the display of Painted Quail is equally puzzling. Whereas in most Pheasants the body-half nearest the partner is kept lowest during display, the reverse is true in Painted Quail. Thus, it appears that some species incline their body toward and others away from the partner and which of the two occurs is not related in a simple way with the side where parts of the wing are extended.

Many other examples could be given and although the published accounts of courtship in Pheasants often do not go into great detail, one gets the impression that the variety is very large. Every attitude

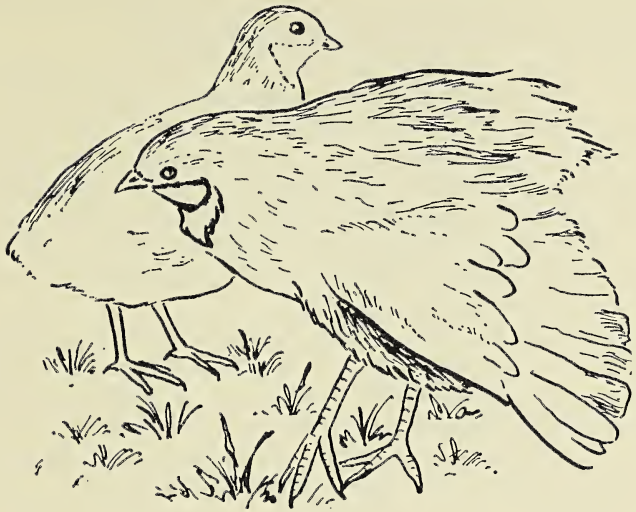


FIG. 2E

that the wings are mechanically capable of assuming seems to be realized in one species or another, especially when the comparison is extended to Gallinaceous birds not belonging to the Pheasants. Moreover, wing display occurs commonly in the courtship of birds in general.

I think it likely that in several of the examples shown, the wing display originated in the same way as in Junglefowl, as the result of a conflict between wing-folding and wing-flapping. In some species, the tendency to fold the wings predominates during the display and the tendency to unfold them, expresses itself at most in a slight, often asymmetric, shifting of the position of the wing-bones of both wings. In other species, parts of one or both wings may be raised or lowered to a greater extent. The result is that the forms of wing display differ greatly from species to species, but many of them could, in principle at least, be due to the same sort of conflict occurring in Junglefowl. It must be concluded that, if this is the case, each species has solved this conflict in its own, more or less unique way.

It is of course quite possible that in some species the origin of wing display is different. For example, in some species the wing display may be derived from balancing movements, necessary to compensate for imminent loss of equilibrium when the bird assumes an oblique posture. Detailed study of each species and of the differences between species will be necessary to find out this. Such detailed studies will probably only be made by ethologists, who are trained in analysing

behaviour, have the opportunity to devote their time to this task, and can profit from the facilities of a research institute.

However, before these people can start with the analysis, it is necessary to have a good descriptive inventory of the behaviour. This is a point where I believe aviculturists could contribute in many important ways. As far as Pheasants are concerned, a good deal of the courtship is already known, but many of the published descriptions are of little use to the ethologist. Vague descriptions like bobbing or waggling of the head and dragging or drooping of the wings are too ambiguous to have any significance for meaningful comparison of differences between species.

I would like to give one or two suggestions which might lead to improvement in this matter. First of all, the observer who is interested in describing behaviour should try to get an analytical eye. For example, in describing movements of wings, he should remember that a bird has two wings and both do not always behave in the same way. He should also realize that a wing is not just an unstructured bone with attached muscles, skin, and feathers. He should be aware while observing that the wing consists of three parts and a good description should take this into account. If this is kept in mind, the observer will realize that the statement : " the wing is lowered " is not satisfactory, if in fact the primaries only were spread.

Second, it is important to make notes immediately while one is observing. I have experienced that any record I make in retrospect is likely to be a distortion of what really happened. Probably other people have been victims of the same human weakness : I know of at least three authors (and they were trained scientists !), who described that waltzing of the domestic cock involves lowering of the wing turned *toward* the female. Such gross mistakes are avoided if one records the behaviour while observing it, either verbally or in drawing, or better still, with photographs and film. Especially the latter techniques are often very useful because many of the rituals of courtship are too complicated and occur too rapidly to be caught correctly with the naked eye.

Of course one can think of many refinements in describing the details of behaviour patterns, such as measuring speed, frequency, or amplitude of movements. Eventually, when our knowledge proceeds, such refinements will be necessary and the work involved in describing the behaviour will then move more and more out of reach of the aviculturist and become the task of the ethologist. At present, however, our descriptions are still not very sophisticated and every keen observer can make new discoveries. The clear descriptions by D. Goodwin, appearing in this MAGAZINE, are good examples of the kind we need for many more species of birds.

* * *

THE BLACK FRANCOLIN

(Francolinus francolinus)

By J. J. Yealland (London, England)

The Black Partridge, Black Francolin or Common Francolin ranges from Cyprus to the hills of Manipur, seven races being recognized.

It is said to have lived as far westward as southern Spain as well as other parts of the Mediterranean area, but it has long since vanished from there except for the island of Cyprus where, so Dr. and Mrs. Bannerman (*Birds of Cyprus*, 1958) were told, " the francolin is now making an excellent recovery both in the Paphos reserve and in the Karpas."

Hume and Marshall (*Game Birds of India, Burmah and Ceylon*, 1879, ii) wrote at length about this bird, but largely about the shooting of it, for it offered " pretty sport " and in places where it was then still abundant " fifty brace may still be bagged in a single day by a single sportsman ". It is, they say, to be found " not only in the plains and lesser chains of hills, but in all the lower outer ranges of the Himalayas, and in the river valleys running far into these, up to elevations, at any rate in summer, of from 5,000 to 7,000 feet ". Further westward it was said to be common " in the tamarisk jungles and reed beds of Mesopotamia ".

The call of the Black Francolin is a familiar sound in the places where it is at all common. It is said to live in pairs, only being in coveys (presumably in family parties) at the end of the breeding season and then only for a short time.

Various small animal life such as beetles, spiders, termites, snails, insect life, and larvae, together with seeds, small fruits, and tender shoots of plants form the diet. The breeding season of the Indian birds is said by Jerdon to be from May to July, ten or twelve eggs being the usual clutch. These appear to be variable in colour, greenish-white, bluish-white, pale olive-green, pale fawn, and chocolate being the colours recorded. Albinos and albinistic specimens were " not very uncommon " and Hume and Marshall report the occurrence of hybrids between this and *Francolinus pictus*, the Southern or Painted Francolin.

The first recorded breeding in captivity in this country was published in the Avicultural Magazine (New Series, vol. vi, 1908) and the Society's medal was presented to the breeder, Mr. C. Barnby Smith, during the following year, though why this was done is not clear, for the hen Francolin, after laying four eggs, took no further interest in them, and they were incubated and the chicks reared entirely by a bantam.

* * *

BREEDING HUME'S BAR-TAILED PHEASANT

By F. E. B. Johnson (Bedford, England)

The pheasants of the genus *Syrmaticus* have always been popular because of their long tails and similarity in shape to the game pheasants which they combine with bold markings and distinctive patterns.

In view of this it is strange that the Bar-tailed Pheasant, *Syrmaticus humiae*, has not been established in captivity in the Western Hemisphere.

The species is divided into two subspecies : Hume's Bar-tailed Pheasant, *Syrmaticus humiae humiae*, occurring in the Naga Hills and in that part of northern Burma lying west of the Irrawaddy ; and the Burmese Bar-tailed Pheasant, *S. h. burmanicus*, found in south-western Yunnan and Northern Burma.

For a full description I would refer readers to Delacour's *The Pheasants of the World*, pp. 213, 214. Briefly, Hume's Pheasant is similar to Elliot's Pheasant but with the following differences : in the male Hume's the underparts are rich brown, not white ; the brown of the upper parts is rich plum-mahogany, not chestnut as in Elliot's, and the blue-black of the upper parts is steel blue in Hume's. The throat and neck of the cock Hume's are black. The tail is barred dark grey and rich brown and black. The feathers of the neck have a metallic subterminal patch as in the Mikado.

In general appearance the cock, in particular, seems to be proportionately much broader across the shoulders than Elliot's and both sexes fan their tails more frequently. These birds are quite as hardy as the other species in the genus.

My pairs of Hume's are housed in the same type of aviaries as the Elliot's Pheasants and these conditions seem to suit the birds as, on 29th April, I found a broken egg under one of the perches in the morning. On the same day the hen of this pair made a scraping in the back of the small shelter. She then laid two more eggs, on 1st May and 3rd May. These eggs were placed under a bantam but proved infertile.

From 5th May to 18th May she laid seven more eggs which were placed under a bantam on 18th May. On 14th June two Hume's chicks hatched ; the remaining five eggs were infertile. This hen continued to lay and five more eggs were placed under a bantam on 28th May. From these eggs four chicks hatched on 24th June.

The incubation period is, therefore, twenty-seven days as in the Mikado Pheasant, *S. mikado*, and not twenty-five days as with Elliot's Pheasant, *S. ellioti*.

The chicks were very similar to Elliot's (I have never seen Mikado

chicks) but were extremely wild and lively ; in fact, when put into a coop and run with their foster mother they persisted for some minutes in banging themselves on the wire-netting of the run and I had great difficulty in persuading them to go under the bantam. Eventually they did so, however, and I am pleased to be able to say that from then on they proved quite easy to rear on a diet of " Turkey Starter " crumbs but with a liberal supply of mealworms. They grew a little more slowly than Elliot's but the cocks were in adult plumage by the age of about five months. They therefore take the adult plumage in the first year.

One point of interest should be mentioned : although the chicks were so wild when young they gradually gained confidence in their surroundings and are now much tamer than my young Elliot's of approximately the same age.

In conclusion, Hume's Pheasant is a striking and beautiful bird, quite as beautiful as either of its near relations, Elliot's Pheasant and the Mikado Pheasant. It is somewhat intermediate in appearance between these other two species but can easily be distinguished from hybrids between them.

It is hoped that many pheasant enthusiasts will take up the species so that it may at last become established in our aviaries.

* * *

MUTATIONS OF THE GOLDEN PHEASANT

By F. E. B. Johnson (Bedford, England)

Since very early times the Golden Pheasant has been a favourite with aviculturists and has been common in captivity in Europe since the eighteenth century. It is probably more numerous in captivity than in the wild.

Most birds that have been bred in captivity for many generations tend to give rise to mutations or colour variations. It is therefore not surprising that two striking mutations have arisen in the case of the Golden Pheasant (*Chrysolophus pictus*).

Before I describe these mutations I feel that a word should be said on the subject in general as it applies to aviculture. A number of aviculturists condemn in the same breath all hybrids and mutations. While hybridizing between two species is only excusable under very special circumstances, mutations are entirely a product of nature and have as much right to be admired and preserved as the original species. The fact that many of them can only be preserved in captivity and would die out in the wild makes them not a whit the less interesting.

The first Golden Pheasant mutation to appear was the form known as the dark-throated or black-throated Golden Pheasant (*Chrysolophus pictus* mut. *obscurus*). It occurred in Amsterdam Zoo some time before the year 1928. It corresponds to the much more familiar " Melanistic Mutant " (*Phasianus colchicus* mut. *tenebrosus*) of the game pheasant. The close parallel is easily shown by the colour of the newly-hatched chicks which are dark chocolate brown with whitish markings about the head and underparts in the above forms of both species.

The main differences between the dark-throated and normal Golden Pheasant are as follows : adult male dark-throated :—

(1) The throat and upper breast are black or blackish.

(2) The central rectrices are barred with alternate bars of black and dark olive brown as are the outer rectrices. It should be noted, however, that the barring is not of the same type as in the tail of the Amherst Pheasant.

(3) The whole of the remainder of the plumage is slightly darker in shade throughout.

In the hen the whole colour is dark chocolate brown but with the usual markings of the normal hen.

The yellow Golden Pheasant (*Chrysolophus pictus* mut. *luteus*) is of more recent occurrence ; the present world stock having been multiplied by Professor Ghigi from a bird obtained by him from Eastern Europe.

The yellow Golden is a striking and beautiful bird and can be considered a " dilute " of the normal colour. In the adult male all the parts that are normally bright red are bright yellow. The crest is yellow. The ruff and green feathers of the mantle are as in the normal golden pheasant but slightly paler in shade. The blue bars of the wings are dull purplish-brown. The central pair of rectrices are spotted as in the normal Golden Pheasant but the spots are cream and the ground colour is fawn. The hen is cream in colour with fawn markings as is the first-year male but the latter has a yellow cast about the face and throat.

As is often the case when a new mutation or aberration occurs, suggestions are put forward that the colour changes are due to hybridization. In the two cases mentioned above there seems to be no evidence that any crossing with the Amherst Pheasant has given rise to these colour changes. The strain of dark-throated Goldens that exists in this country at the present time appears to be particularly pure. These birds are very small (as all good Golden Pheasants should be) and, when mated to normal Goldens of good appearance, the resultant male progeny (not dark-throated but carrying the factor in recessive form) have tails which are regularly and finely spotted. While, when the breeding is carried to the next stage (dark-throated

male to split hens or vice versa) all the progeny are either dark-throated or normal in appearance and the former have the correctly striped tail. There are none intermediate in appearance.

In the yellow Golden, specimens do not occur with part red, part yellow breasts and when these occur among normal Goldens they are usually an indication of impurity.

It is to be hoped that others will breed these interesting birds ; possibly to be rewarded one day by the appearance of an even more beautiful further stage in either mutation.

* * *

BREEDING THE KNYSNA TOURACO

(*Turacus corythaix*)

Claude M. Payne (Barford, Warwickshire, England)

Touracos are restricted to Africa and there are about twenty species of which four, including the Knysna, are found in South Africa where they are known as Louries. The Knysna Touraco occurs only in the lush evergreen forests of Knysna eastwards to Natal. The head, neck and breast, are green of an iridescent quality, there is a white line under the eye, the back wings and tail are iridescent green with blue reflections, the crest is rounded tipped with white, the scapulars, wing-coverts and innermost secondaries are violet, blue and green, the greater part of the flight-feathers are crimson with the edges dark blue, the eye brown, the bare skin round the eye red, bill orange-red, and feet and toes black. Sexes are alike. The juvenile plumage is similar to the adult, but much duller, and there are no white tips to the crest. The bill is dull brown and the skin round the eye dusky. The crimson in the wings contains turacin a copper-based pigment, said to be soluble in water, a fact, if such it is, which I have failed to prove, although many feathers have been immersed in water and in various solutions. Is it a scientific fact or an oft repeated, and thereby semi-fairy tale ?

During the late summer of 1959, I believe a few pairs of this beautiful Touraco were to be seen in dealers' shops in England. There is, I understand, a very interesting story as to how the birds were caught and sent here, notwithstanding the heavy penalties imposed on trappers. However, the story, interesting as it may be, does not entitle it to a place in this magazine. But what does concern the Society is that in 1959 I saw a number of birds for sale, and being all together in a large cage, made a truly wonderful sight. The only Touracos I have possessed were a pair of Hartlaub's which are considerably smaller than the majestic Knysnas. I had found the Hartlaub's easy to feed, house and manage, so the desire to possess a pair of Knysnas was not readily

quelled. I looked long and hard at the birds who eyed me back in their inimitable fashion ; perhaps who knows, weighing me up in much the same way as I was weighing up my chances of choosing a pair.

Touracos have tremendously powerful feet and legs, and propel themselves through the air from perch to perch by strong muscular leg action, helped by one wing beat half-way between the two perches. They also have the habit of running rather than hopping along a branch. The feet are zygodactylous, that is to say, they can place two claws each side of a branch, or three forward and one to the rear, and so obtain considerable grip and purchase for their flying leaps.

They are by nature active birds, particularly in the mornings and early evenings, when the male bird, I believe the male only, makes the characteristic noise from which the word Touraco is derived, i.e. " Cou Cou Cou " repeated in the same key many times over. I am travelling on with my tale a little too fast perhaps, but two birds, which I hoped would be a pair, were duly deposited in one of my planted aviaries containing a tangle of vegetation growing through stout branches of hazel-nut and apple tree. The aviary is one of a group built round a wooden shelter and divided into six compartments. Incidentally as two other flights in the group have already had their moment of fame, having been the birth-place of two other first breedings, one can only surmise that something in the make-up of this aviary has an influence on the virility of the inmates.

The shelter for the compartment in which the Touracos were placed is 4 feet square and the flight about 15 by 10 feet. The birds did very well in their new surroundings, feeding freely on bananas, grapes, pears and any other fruit as became available, including mulberries.

They were in such good condition and feather that I decided to leave them out for the winter, as it turned out with no ill effects, in fact, the birds came through in absolutely wonderful fettle, and the early Spring dawns were heralded by the not unmusical sonorous call. At this time I had no thoughts of breeding, but as each Spring arrives my hopes rise, that I may once again be successful with one or other of the pairs which have not been bred before. However, my hopes, such as they were, were soon dispersed—one Touraco killed the other. The dead bird was found with its head broken open. It was fairly obvious that I had chosen two cock birds.

I thought there was little chance of obtaining another bird, particularly a hen, and for the summer, or at least until the August, the surviving cock bird had other birds for companions.

In August, however, I saw an advertisement offering a Knysna Touraco for sale by my good friend Alan Griffiths, who very kindly let me have the bird although neither he nor I had any idea of its sex.

I was afraid to put the two birds together until the new arrival had settled down, and therefore gave it a somewhat smaller aviary adjoining

that of the other Touraco, where the birds could see each other and pass such pleasantries as Touracos are wont to do. So things remained until the Spring of 1961 when on one rather pleasant quiet day I took the plunge and placed the Griffiths bird in the aviary with the cock, prior to this removing all the other inmates. Imagine my delight and satisfaction when immediately the old bird " cou ", " coued " for a short spell and then fed the new-comer by regurgitation. I felt that this time I had a true pair.

As days passed and the power of the Spring sun increased, so did the cry of the Touracos. Then at the highest point in the shelter I put up a contraption, made of thin saplings and the last-year runners from the Russian Vine made to resemble an open nest, and into this saucer-like shape I put a handful of straw and rootlets. Some weeks went by and the noise became more constant and prolonged until at last my bird-man, Mr. Beck, reported that when he was feeding the birds in the aviary he had seen a bird leave the nest.

After this I made a habit of examining the nest at frequent intervals until one morning in May a white egg was seen through the rather sparse covering of the twigs which formed the base of the man-made nest. Not daring to interfere or remove the egg for examination, I left the birds alone for a week, after which I explored the nest again, hoping to find at least one other egg. But, alas, there was none, and search as one would, no shell or any indication that there had been an egg was to be found.

This ended the breeding attempts for 1961, although the birds maintained a very close companionship and the cock continued to call, but again only in the mornings and evenings during the Summer. As in the Winter of 1960–61 so in the Winter of 1961–62 the birds were left in the aviary open to all weathers and without heat. And so to the Spring of 1962 when hopes of a successful first breeding ran high, as both birds had come through the severe weather which we experienced in late December and early January in first-rate condition.

This year instead of the pseudo-nest in the shelter, I constructed, with the aid of wire netting and some evergreens a very passable nest in the corner of the flight near the top of the aviary. I was elated when, almost before I had closed the aviary door behind me, one bird scrambled along the branches and peered into the clump of evergreens, and later that day was seen actually inside and settling in the depression in the wire in which I had placed some twigs and dried grass.

Both birds showed great interest in the nest, and after about three weeks the first egg was seen. From this time on the hen bird only left the nest during the day for a minute or so, about 4.30 in the afternoon, although she may well have done so early in the mornings. I thought on one or two occasions that the cock bird was doing his share of the

incubating, but could never be certain, as the birds are so much alike. The hen, or the cock, if indeed he did help with the incubating, sat so close that I never knew if more than one egg was laid. Some four weeks after the incubation began, Mr. Beck gave me the glad news that a young one had hatched. It seems he was walking in the garden and happened to pass the aviary and saw the hen bird was off the nest. Peering through the branches he saw a dark object which moved, and wisely he retired quickly and left the birds alone. I saw the young bird myself on the following day and at a guess it was about seven days old. It was covered in a dark brown, almost black, fluff, and its eyes were open. The hen bird brooded continually and only left the nest to feed, and then only for a few moments, until the young one was about three weeks old, when I was able to observe the growth and development. At this time the crest was beginning to form and if I got too close the young bird hissed and struck out as if to defend itself.

One month after hatching I found the youngster still in the nest, but cold. Obviously the hen had deserted, so I brought the young one into the hospital cage at about 80° F. and it soon recovered. It was then noticed that it could not stand, as one leg was thrust forward at an angle. Perhaps that is why the hen deserted ; because of this deformity the young one could not leave the nest. It was a very large if somewhat ugly baby.

I attempted to hand-rear the bird but without success. As I was going on holiday that day, I took the bird with me and fed it at frequent intervals during the journey, but either the food—banana and crushed grape—was too cold, or the car journey too rough, for it brought back most of the food and although it appeared to pick up during the evening, it was dead next morning.

Some three weeks after the hen deserted the first young one, she again sat on the nest and the cock bird spent most of his time close by, frequently calling. A day or so later, on 28th July, 1962, the first egg was seen, and two days later there were two. The eggs resembled table-tennis balls, being roughly that size, pure white, and without gloss, perhaps not quite so round but not noticeably oval either.

The hen sat steadily until 20th August, 1962, when a young one was seen. Two days later two young were seen, their eyes wide open with their heads through their mother's wing as one often sees chickens. They appeared strong and healthy so my hopes rose for a success this time. The old birds were being fed the usual mixture of cut fruit, particularly banana, and I then gave them a pot of a proprietary soft-bill food which they seemed to like, so much so that large quantities of the soft food were consumed. This pattern of feeding continued for about fourteen days when a return was made to the fruit. The young at this time were showing distinct quill and tail feathers, although very few feathers appeared on the body. The general feathering pattern

did not appear to follow as both wings and tail grew without any attendant increase in the body feathers. The birds continued to thrive, until they were about one month old when one young one was found dead in the nest. It was quite flattened, and it was therefore impossible to say whether death was due to a lack of food.

The following day the remaining young one left the nest, and the hen was seen brooding the bird during the late evening on a low branch. The next day the young bird spent most of its time on the ground. The old birds were very excited and from observations which were then made they were seen to visit the young one every few minutes. No feeding took place so far as it was possible to ascertain, during the short time in which the birds were closely observed.

Unfortunately on the following afternoon the weather turned cold and we had a very heavy downpour of rain. The hen was seen brooding the young bird but, nevertheless, after the storm it was found in a distressed condition on the aviary floor. Drastic action had to be taken, and the young bird was brought into the hospital cage with considerable heat. It was a very bedraggled object, just a few feathers among the fluff on the body and the rain sodden tail and wings, but after a time it perked up and became quite lively. A few drops of brandy were given and this no doubt helped to ward off a chill. A mixture of sponge cake and milk was prepared and fed very hot to the bird, it lunged at the spoon and removed the food. A pot of cut bananas and grapes was placed in the cage and it was not long before it decided to help itself. It had a voracious appetite, and a tremendous gape.

For safety's sake it was left in the hospital cage for about seven days and then placed in the birdroom in much less heat where it continued to make progress.

At the time of writing, although now covered in feathers it still is only a shadow of what I hope it will become after its first moult.

As described, Claude M. Payne has bred the Knysna Touraco *Turacus corythaix*. It is believed this may be a first success. Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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BREEDING THE BLUE-SHOULDERED MOUNTAIN TANAGER

(*Compsocoma somptuosa*)

Habitat—The Andes of Ecuador and Columbia

W. D. Cummings (Keston, Kent, England)

Eighteen months ago at the Keston Foreign Bird Farm we were offered four Blue-shouldered Mountain Tanagers from a well-known importer, and though a little sceptical over the ability to keep tanagers in our outdoor planted aviaries all the year we decided to try these. We thought they would be hardier and stand up to outdoor conditions better than the smaller tanagers, which generally speaking, thrive better under conservatory conditions.

We put them in one of a range of planted flights with access to a shelter which is heated in the winter. The four were shut in the shelter to begin with, for they were in importation plumage and not acclimatized. Three of the tanagers had pale yellow breasts and the other, the fittest of them, was a bright buttercup colour. One had a swollen foot and they were all a little puffed-up. We had received them in the month of October which is not the best month to acclimatize newly imported birds, but we need not have worried for, with very little heat, plenty of exercise and bathing facilities, and a varied diet, they very soon picked up and needed no extra attention.

They varied quite a bit in size and it was not at all easy to distinguish the sexes. They are identical in colour but the hen seemed to have a finer head and beak and the flat yellow patch on top of the head is narrower in the hens. They are a little larger than the Amethyst Starling and one about the size of our English Thrush. They are predominantly yellow, with blue shoulders and black flights, with broad blue and black through the eye. Now they are all a brilliant buttercup yellow and have the sleek tanager shape—they are really beautiful birds.

Apart from their colouring, they are extremely confiding in nature and altogether make extremely attractive aviary inmates. One thing, however, is that when they are fit one has to be careful which other species of birds one mixes with them for they do tend to be aggressive. We have mixed an odd Blue-shoulder out of the breeding season with Rock Thrushes and Amethyst Starlings and we had no trouble apart from the normal amount of disagreements.

We feed them with the usual insectivorous mixture and they eat this freely and since it is moistened with carrot juice we think this is the reason we keep the depth of yellow on their bodies. Apart from this, their diet consists of a few mealworms and gentles, chopped dates,

soaked currants, chopped grapes and slices of pear and apple, and this is supplemented by blackberries and elderberries in the autumn. They seem to like a mixed fruit diet and sample a bit of everything.

We kept the four birds together all winter and throughout the following year, for we were not sure of their sexes and anyway they appeared to agree perfectly. Towards that autumn one bird started to build a nest in a thick macracarpa fir in the flight, but it was discouraged from continuing when we started shutting them in the shelter as the nights got cold. The nest was open and cup-shaped, well made and tight fitting, made mainly with coarse grass and fibrous roots. They passed the winter without any ill effects and the temperature of the shelter was kept just above freezing.

The following Spring, 1962, there seemed to be a considerable amount of activity—following each other up and down the flight—but it was not easy to say who was doing what, for we could not tell them apart. The original brightly coloured bird was distinguishable as an obvious cock and it seemed to be following two others up and down ; so we presumed there were two cocks and a hen—and the fourth a rather disinterested spectator, another hen. However, before we could decide how to split them into pairs we found one dead in the flight and this proved to be the odd hen. So we now took a cock bird out and left the smaller of the three with the brilliant cock. She quickly built a second nest in the macracarpa fir and laid three eggs. They were large, heavily speckled on a grey-blue background. At least two young hatched and we could see how they were progressing for the bush was growing very close to the shelter and, by standing in the shelter and looking out through the entrance hole, we could see them being fed. They appeared fully fledged in just over three weeks and we anticipated a successful rearing, for both parents were extremely attentive and excellent feeders. Then one morning, while we were replenishing their live food, there appeared less activity than usual and there was no sound coming from the bush, so we thought they had left the nest. However, after a week, it was obvious the parents were not eating as much live food as they ought, and they also ceased to make their warning noises when one approached the aviary.

So the flight was searched and we found one fully fledged corpse in the grass, identical in colour to the parents, only a paler yellow.

The pair then went into nest again and once more the process was repeated, the youngsters disappearing when they ought to be fledging. This took us into the middle of September and since we do not give much hope to late breeding successes we did not think that there was much likelihood of success this year. The hen decided otherwise, however, and before we could do anything about it we found she had laid two more eggs in a fourth nest in the macracarpa. We could think of no other way of avoiding the same results other than taking the cock

bird away, which we did, for we could lose nothing by it. We thought he might be killing the young as they fledged for, since they are identical in colouring, they could have been mistaken as rivals by an over attentive parent. This was just the last thing we could think of and it proved to be the case, although we have never actually seen him attacking the young. The hen bird finished rearing the two young of the third nest. She was an excellent little feeder and we need not have worried on that score. Unfortunately, the second youngster left the nest during a spell of light night frost and, although we shut the three of them in the shelter at night, we could do nothing to save it. The other surviving youngster is now independent and is a lovely, healthy bird and we think a hen. A few deeper yellow feathers are already beginning to show through the paler ones.

This will now give us two pairs of these lovely birds for our collection.

As described by W. D. Cummings, the Keston Foreign Bird Farm has bred the Blue-shouldered Mountain Tanager *Compsocoma somptuosa*. It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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THE BREEDING OF MITCHELL'S LORIKEET

(*Trichoglossus haematod mitchellii*)

C. Smith (Bradford, Yorkshire, England)

Mitchell's Lorikeets are about 8 inches long with nigger brown head faintly tinged with green. The bill is orange. The cock has a brilliant red breast while the hen is slightly less brilliant with a tinge of yellow. The red is succeeded by a very dark blue-black abdomen, followed by yellow and green underneath. They have a pale green collar and the cock has a blackish band of feathers and green back, rump and tail. Underside of wings is red and yellow, wing tips black.

The birds were housed in a 10 feet long by 6 feet high by 2 ft. 6 in. wide flight with no other occupants. Feeding and sleeping quarters were in the adjacent birdroom. The nest-box was hung in the outside flight about 6 feet high and facing north. The box was 10 inches high by 7 inches by 6 inches with a $2\frac{1}{4}$ inch entrance hole. A layer of small pebbles was put in the bottom covered by a layer of peat moss and rotten wood. Interest was shown in the nest-box about the beginning of May and on 14th May two eggs were seen laid on top of the bare pebbles. The birds had removed every trace of peat moss and wood.

Although the hen appeared to be in the nest-box most of the time, it would come dashing out when anyone approached. Due to the nervous disposition of the hen no inspection was made until 12th June when the nest still contained two eggs. The hen did not return to the nest-box again so on 15th June the nest-box was opened again and the eggs were found to be cold. One egg was clear and the other contained a fully developed dead chick.

The birds were seen in the box again on 22nd June but were left alone except for a quick look on 10th July when two eggs were seen. Again the hen seemed to leave the nest on the slightest excuse, so no inspection was made until 6th August. There was one chick and one egg on that date. On 14th August both eggs had hatched but one chick was much larger than the other. On 22nd August both chicks were covered with grey down. On 14th September the larger of the chicks appeared to be fully feathered, the other being only half feathered. The older chick appeared at the nest-box entrance on 27th September, and on 30th September left the box fully feathered. The parents were still visiting the nest but the second chick was found to be dead on 7th October. The young one has the brilliant red chest of the parents, but the head is very dark green and the bill is all black. The rest of the plumage is the same as the adult pair. The birds are fed twice a day with nectar, supplemented by canary seed, millet sprays and gentles which they seem to enjoy. The young one is now taking nectar from the bottle and the beak is gradually taking on a lighter colour.

This year I have also bred two Jenday Conures, six Cockatiels, four Nyasa lovebirds and five Fischer's Lovebirds but have not had any success with my Australian Parrakeets.

As described, C. Smith has bred Mitchell's Lorikeet *Trichoglossus haematod mitchellii*. It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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BREEDING OF THE CRIMSON OR GREEN-WINGED MACAW

Ara chloroptera

By J. S. Rigge (Millom, Cumberland, England)

This pair of Macaws were purchased by me on 7th August, 1956, and judging by the very light eye were obviously fully adult at the time. They were put in an aviary measuring 17 by 8 by 6 feet high which was only made of 18 gauge ½-in. mesh wire netting on a 2 by 2 inch wood frame; an aviary not really considered strong enough for Macaws, but as usually happens, the only one available at the time. It would not have kept either my Illigers or Blue and Gold Macaws under control for more than a few hours but, although it is now well patched, this pair have been in it for six years.

In the Spring of 1958 a nest was provided in the form of a large oak barrel butter-churn fixed horizontally on its stand. That year and in 1959 nothing happened, but on 16th May, 1960, an egg appeared without warning and two more followed. The hen sat perfectly until 27th June, when I decided to inspect as no sound of young had been heard. The eggs were then found to be addled and were removed.

In 1961 the first egg was laid on 18th May and a second one followed about two days later. Again the hen sat perfectly, hardly ever being seen off the nest. On 22nd June I decided to investigate and found two dead, newly-hatched young in a nest which was full of dust. The hen having chewed up the damp rotten wood and her body warmth had dried it to a very fine dust, this, I think, had asphyxiated the young. Again my hopes were dashed for another year.

This year, 1962, I was determined to avoid the dusty state of the nest so I cut a large damp peat sod (we have plenty of natural peat around here) about 8 inches thick and large enough to cover the bottom of the nest. On 18th April, an egg was laid, and I think this was the only one. After letting the hen sit for five weeks I inspected the nest and found the egg contained a fully formed dead chick and I thought this would be the finish again for this year. However, the hen never left the nest and after a week or two had passed, I presumed she must have laid again and was incubating. On 7th July, a young bird was heard to squeak and on 12th July, I first saw two young birds. So as not to disturb the birds too much, I had arranged it so that I could see what was going on in the nest without going in the aviary. The parents were not too aggressive as long as you did not approach the nest, but they sat on the entrance to it and I should not like to try and move them.

For a fortnight I heard the young being fed as I passed the aviary, then suddenly all was quiet and I had a feeling something had gone

wrong. But I could see them quite fit and strong so all was well, but I never heard them make a sound again, I never knew anything so quiet in the nest.

Feeding now became a problem as I tried everything I had heard of being used to rear Parrots etc., but the hen positively refused to look at anything except sunflower seed, a little hemp, and about five large spinach beet leaves a day, but the young seemed to be growing fast so I left it at that.

The hen started to leave the nest a bit when the young were five weeks old and the red feathers were beginning to show on their heads. Up till then she had tried to brood them all day even though she could hardly cover them. I was glad to see her out for a bit as she had hardly ever left the nest from 18th April till 10th August, and I thought her health might suffer. The cock was seen in the nest feeding either the hen or the young once or twice, but the pair were so secretive in their goings-on that I wondered when anything ever happened. They never appeared to be doing anything when I was about, and I have never seen the cock feed the hen off the nest, but once when they were unaware of my presence I did see mating taking place and this seemed to be accomplished with the birds inclined towards each other on the perch and not by the cock mounting the hen as in other birds.

The young appeared to be more or less perfectly feathered at nine weeks of age, and at this time about 1 lb. of seed and five large spinach beet leaves were being consumed by the family each day.

The first young one left the nest on 18th October, after 103 days and the second one on 22nd October, four days later. They were almost exact replicas of the parents in size and colour except for the shorter tail, dark eye, and the lower half of the beak being only shaded with grey and not jet black as in the parents. Also the one I consider to be the male has the feathers on the nape tipped with yellowish olive and in the female these are crimson as in the adults, but whether this is a colour variation as in young Pennant's or a sexual difference I should not like to say, but I feel certain they are a true pair as they have the same beak variation as in the adults.

As described, J. S. Rigge has bred the Crimson Macaw *Ara chloroptera*. It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

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NEWS FROM CHESTER ZOO

By A. W. E. Fletcher

As a footnote to the breeding results already recorded in the Magazine another Scaly-breasted Lorikeet has been reared, but both Leadbeater's Cockatoo and King Parrakeets had eggs which failed to hatch.

Although two King Penguin chicks were hatched both failed to rear—in the first place due to the death of the male parent and in the second case the young chick was killed by either a rat or a crow.

New arrivals include two Single-wattled Cassowaries, which are young birds and the exact species has not yet been determined. At present they are a golden-brown in colour, but will get a great deal darker as they mature. Adult Cassowaries are extremely dangerous, and cases have been known in New Guinea of their killing natives. The inner toenail is very elongated and they have a powerful kick. Our keepers have been warned !

Two Scarlet Ibises have been added to the collection. They are immature, hand-reared birds, and still show a great deal of their brown nestling feathers, though pink is beginning to show. It is hoped that a large flight can be fitted out for the Ibises and also Bitterns, Rails, and waders.

A young Occipital Blue Pie has been purchased, and as it has become very friendly with our original bird, it is hoped that we now have a true pair.

Presentations include a Kestrel, an Indian Hill Mynah, an English Partridge, four Little Owls and an oiled-up immature Herring Gull. This we have managed to clean up and it can now fly and is in good fettle. Not so fortunate was a badly oiled Common Scoter drake which only survived for twenty-four hours, although eating well.

A number of new enclosures and aviaries are in course of construction or are planned. Three of these enclosures are situated opposite the new Rhino House and should be completed shortly. The enclosures will contain cranes and waterfowl. The largest enclosure is about an acre-and-a-half, with a large reed-fringed pond. The other two are rather smaller and each enclosure has a small pond in it. Roomy log-cabin type sheds for winter quarters will be provided for each enclosure.

The frame of a very large flight has been erected near the Birds of Prey aviary. This is 150 by 15 by 20 feet high. Exactly what will be housed here has yet to be decided.

It is hoped in the near future to extend our Bird House into the area now occupied by the breeding aviaries. These aviaries have now just about reached the end of their useful life.

Last but by no means least, work on the new Tropical House has commenced. This will be exciting enough to merit an article to itself

in a future MAGAZINE, so I will confine myself to saying that we are all tremendously interested in its possibilities.

We are now pre-occupied by all the problems of winter quarters and are keeping our fingers crossed that the next few months will be kinder than this time last year.

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LONDON ZOO NOTES

By J. J. YEALLAND

Among the birds received during the past two months are two species new to the collection.

These are the Sickle-winged Guan, *Chamaepetes unicolor* and Hume's Bar-tailed Pheasant, *Syrmaticus humiae humiae*.

The Sickle-winged Guan, a native of the highlands of Costa Rica and western Panama, is so named because the first three primaries are very curved and the width of barb much reduced or, towards the tip, absent. One other species (*C. goudotii*) lives in northern South America.

Hume's Bar-tailed Pheasant inhabits the mountainous parts of northern Burma westward of the Irrawaddy. A second race (*S. h. burmanicus*) living eastward of the river in northern Burma, south-western Yunnan and the Shan States.

Other arrivals of particular interest are two Fulvous Whistling Ducks bred by Mr. J. O. D'eath and presented by him, a Panama Curassow (*Crax r. rubra*) presented by Mr. P. H. Hastings together with the Guans already mentioned, a Black-casqued Hornbill (*Ceratogymna atrata*) and an African Golden Oriole. Two young Dial or Dhyal Birds (or Magpie Robins) have been presented by Mr. I. S. Horabin who bred them.

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COUNCIL MEETING

A Council Meeting was held on 12th November, 1962, at the Windsor Hotel, Lancaster Gate, London, W. 2.

OFFICERS FOR 1963

These were the following retirements and appointments :—

Council : Dr. E. Hindle, Dr. F. B. Lake, and Mr. K. A. Norris retired by rotation. Dr. W. C. Osman Hill resigned on leaving England for permanent residence in America.

Mr. C. M. Payne, Mr. E. O. Squire, Mr. Newton R. Steel, and Mr. J. J. Yealland were elected to fill the vacancies.

Hon. Life Members

The following were elected Hon. Life Members :—

Mr. C. K. Lucas, Mr. A. F. Moody, and Mr. D. G. Schuyl.

Arthur A. Prestwich,
Hon. Secretary.

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BRITISH AVICULTURISTS' CLUB

The seventy-ninth meeting of the Club was held at the Windsor Hotel, Lancaster Gate, London, W. 2, on Monday, 12th November, 1962, following a dinner at 7 p.m.

Chairman : Mr. K. A. Norris.

Members of the Club : P. S. Bates, A. W. Bolton, Miss K. Bonner, R. A. Copley, W. D. Cummings, J. O. D'eath, A. C. Edmonds, Miss R. Ezra, Mrs. O. L. Gent, Dr. R. Gottlieb, J. Hancock, H. J. Harman, L. W. Hill, Dr. W. C. Osman Hill, F. E. B. Johnson, Dr. S. B. Kendall, Miss E. M. Knobel, C. Marler, R. F. Marshall, P. H. Maxwell, F. Mosford, Sir Crawford McCullagh, Bt., W. R. Partridge, J. W. Peel, A. A. Prestwich, D. H. S. Risdon, B. E. Robinson, R. C. J. Sawyer, H. A. Snazle, T. Spence, A. J. Swain, J. Trollope, P. L. Wayre, Mrs. G. Wheatley, Mrs. J. Williams, J. J. Yealland.

Members of the Club, thirty-seven ; guests, fifteen ; total, fifty-two.

J. O. D'eath showed his colour film " East African Safari, 1961".

Arthur A. Prestwich,
Hon. Secretary.

The meeting arranged for 7th January, 1963, was cancelled owing to the weather.

The date of the next meeting is Monday, **11th March, 1963.**

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NEWS AND VIEWS

W. L. E. de Alwis has been appointed Director, Zoological Gardens of Ceylon, in succession to Major A. N. Weinman.

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Kenneth Smith relinquished his position of Superintendent of the Jersey Zoo Park on 30th November, 1962. He will develop his small zoo at Exmouth, Devon, and is also negotiating for the establishment of another zoo on the south coast.

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Walther Langberg, Copenhagen, further reports : " I think the two young Grey Parrots will leave the nest-box in a few days. I saw them looking out of the entrance-hole to-day " (21st August, 1962).

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A Blue and Yellow Macaw, owned by F. W. Stoddart, has come to an untimely end. Escaping from its aviary, it sought refuge in some nearby woods. There a party of army officers from Aldershot very unfortunately shot it in mistake for a pheasant.

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The Simon Harvey Memorial Medal awarded annually by the Avicultural Society of South Australia, for the most outstanding first breeding achievement, has been awarded to R. W. McKechnie, for breeding the Pheasant-tailed Cuckoo Dove *Macropygia phasianella*.

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Joseph Niemczak has been elected President of the Avicultural Society of America, in succession of Paul Schneider. The secretaryship remains in the very capable hands of Otis Wade, but there is a newly-appointed Treasurer—David King.

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C. Fechner, for many years Treasurer, Avicultural Society of South Australia, reports : " I had quite a successful year and bred quite a few species. I was lucky enough to get the Black-capped Waxbills to breed. This is the first time in this State, and I think would probably be the first in Australia."

* * *

The highlight of the last breeding season with Newton Steel was the rearing of a young Leadbeater's Cockatoo. Other rearings included three Redrumps, four Cockatiels, three Chinese Painted Quail, two Golden-breasted Waxbills, two Diamond Doves ; thirteen Reeves's, fifteen Lady Amherst's, one Silver, one Elliot's, and five Golden Pheasants.

* * *

Elsewhere in this number of the MAGAZINE there is a breeding account by F. E. B. Johnson of Hume's Bar-tailed Pheasant. It is interesting to note that the Berlin Zoo (West) has recently received two pairs of this rare pheasant—the first to be imported into Germany. Unfortunately one of the hens had a severe compound fracture of the leg, as a result of which she died a few days later. The remaining three birds have settled down very well.

* * *

Dr. Norman P. Sholar, Mooresville, North Carolina, reports : " This year we reared twelve Port Lincolns from two pairs and thirteen Pennants from two pairs. Twenty-five eggs hatched and twenty-four young were reared to leave the nest. We had three losses—two due to accidents and one from illness. All of our broad-tails relish mealworms, especially during breeding time. The young birds also take to eating them after they are free of the nest."

* * *

Dr. Karl Plath writes : " Since my retirement as Curator of Birds, Chicago Zoological Park, in July, 1960, I have had more time to spend on my former avocation, painting birds. I have recently had the honour of being elected a Fellow of the Royal Society of Arts (London). When I first joined the Avicultural Society in 1924 I lived in a part of Chicago where one could have a fairly large garden, and it was there that I had in all about 400 species of birds. Later, after becoming Curator of Birds at Brookfield, we moved to Oak Park (adjoining Chicago) and had even more ground ; but the keeping of any livestock in Oak Park is unlawful and so I had to give up my prized collection. Most of it, however, went to Brookfield. Now we only have ' Toto ', a Grey Parrot, which we had hand-reared.

My successor is Ronald Blakely, who is doing very well."

* * *

Derek Goodwin was surprised that anyone should have thought that his success in breeding the Blue-headed Waxbill was a " first ". I was surprised that this should not prove to be the case. This waxbill was apparently first imported by G. B. Chapman in May, 1927. It was first bred by A. Decoux in France, in 1930 (see *Avicult. Mag.*, 1931, 37). A. R. Hynd reports that the late John Cranna was successful in Scotland in 1933. In view of the fact that Cecil Webb brought a number in 1934 it is possible that Cranna's success was really a year or so later than that reported.

Derek Goodwin has bred others since, and writes : " They certainly are not difficult to breed given a bit of care. I would have bred more but for having to have all my birds flying together in one small room. This, of course, results in a certain amount of nest-destruction and so on. And one brood of four fine young Blue-heads, about ten days old, were poisoned by *wild* mealworms which I foolishly gave the parents. All the waxbills that ate them were ill (those that didn't were not) and these four young died."

* * *

E. H. Hawke, Lourenco Marques, writes : " In May of this year, Mr. Jack Scheepers, the well-known trapper and exporter of birds, caught in the Maputa area of this territory a pair of Melbas, the cock of which is coloured so unusually that one can be excused wondering whether something new has been discovered in our bird life.

The hen seems identical with the hen of *Pytilia melba* but the facial mask of the new bird is a very definite orange as opposed to the scarlet of the male. No other difference, even of size, can be noted except that the birds do not seem to display the same pugnacity one usually expects from Melbas.

The pair were entrusted to my care and, very naturally, they were caged separately in the hope that if they bred, the male issue would provide some clue as to whether father was just a freak or not. In

July the birds went to nest and early in September four very fine youngsters were perched. These are now quite independent and as the parents are displaying a readiness to repeat their effort, I have removed the young birds to another aviary where they remain uncontaminated by any other members of the Melba family.

I am now anxiously awaiting the first moult to see how the young males colour out and for the benefit of those of your readers who may be interested in this unusual experience, I will report again later."

A. A. P.

* * *

REVIEWS

THE MIGRATION OF BIRDS. By Jean Dorst. Translated by Constance D. Sherman. Heinemann, London, 1962. Price 50*s*. net.

The periodical disappearance and return of birds has interested man since the dawn of history and many legends and theories have been invented in explanation. It is only comparatively recently, however, that the fundamental causes of migration and some of the methods of orientation have been discovered.

The author, for many years curator of birds and mammals at the Muséum National d'Histoire Naturelle, Paris, has attempted to collect the available information on the subject from earliest times down to the results of present-day research. The study of migrations has been greatly helped in recent times by the development of bird stations in various parts of the world and also by the use of new and scientific methods, such as bird ringing and radar, which are providing much more accurate information than was possible by simple observation.

The book is divided into thirteen chapters, the first dealing with old explanations of bird migration, followed by methods of studying migrations. The migrations in Europe and North Asia ; in North America, in the southern hemisphere, in intertropical regions, and in sea-birds, respectively, are considered in separate chapters, followed by Modes of Migration. Bird Invasions, Hibernation, Physiological Stimuli and Orientation, and the Origin and Evolution of Migration. Some idea of the literature on the subject may be gathered from the bibliography which comprises fifty-two pages and contains only a fraction of the articles and reports devoted to the subject.

This is the most comprehensive study of bird migration ever published and is likely to appeal to both amateur ornithologists and experts in the subject. It can be thoroughly recommended to anyone interested in this fascinating problem and is likely to long remain a standard work on the subject.

E. H.

BIRDS OF THE WORLD. By Oliver L. Austin, Jr. Illustrations by Arthur Singer. Paul Hamlyn, London, 1962. Price 84*s*. net.

The statement on the jacket of this book that it is a spectacular presentation of all the bird families of the world is by no means an overstatement, for it is certainly most striking and attractive, the placing of the illustrations within the letterpress being particularly pleasing. The artist, Arthur Singer, has produced no less than 300 paintings in colour of a very high standard, both from the point of view of accuracy and artistic value, and they are excellently reproduced. In his preface the author states : " The following pages present a comprehensive survey of the world's birds to show them as they are—a natural living entity. I have tried to explain something of their origin and evolution, their distributions, life histories, behaviour, and their relationships to one another and to their environments." Dr. Austin has succeeded admirably in this task and deals with twenty-seven Orders and 155 Families of birds. Much of the information contained in the book is obtained from the writings of other ornithologists and there is a partial bibliography of the more important of the many works consulted in compiling this work.

This is a book which will not only be of continual help and use but a constant source of pleasure.

P. B.-S.

* * *

NOTES

The Breeding of a Crake

The photograph accompanying Mr. Everitt's account of the breeding of the " Red-legged Water-Rail " and his description of the parents make it evident that this is not *Ortygops notata*, as stated, but *Laterallus leucopyrrhus*, the Red and White Crake or Southern White-breasted Crake.

Ortygops (now *Coturnicops*) *notata* is much smaller, with the feathers of the back and wings brown with blackish centres and spotted with white. The breast and abdomen are whitish, the feathers being tipped with black. The legs are olive-green.

J. J. Yealland.

Jameson's Firefinch and the Dark Firefinch

In 1957 I wrote an article in the Avicultural Magazine about the behaviour of the Dark Firefinch, *Lagonosticta rubricata*. Recent studies by C. M. N. White and H. E. Wolters have shown that Jameson's Firefinch, *L. jamesoni*, is more widely distributed than was thought, and that a West African race, *virata*, belongs to the latter, and not the former species. It was also found that the name *rhodopareia* should be used for Jameson's Firefinch and not for a race of the Dark Firefinch. I had kept a skin of one of my birds, and I now find that most, if not all of my notes refer to a dark race of *L. rhodopareia* (= *L. jamesoni*) and not to *L. rubricata*. The colours of the races of both species vary in the same way in similar areas, and the only sure guide appears to be the shape of the tip of the outermost large primary, which is emarginated in the Dark Firefinch and entire in Jameson's Firefinch.

C. J. O. Harrison.

Notes on a Parrot Collection in Calcutta

Since I last wrote to you in 1957 about my Golden-headed Conures having bred, three in November, 1956, and three in February, 1957, that is when they left their nest, three more left their nest in October, 1957. In January, 1958, three more with another three in May, 1958, and one in March, 1961.

In August, 1961, I had two young from Pale-headed Rosella × Red-rumped Parrakeets. The young are more like the Rosella. Although I have bred Cockatiels many years ago I kept no record. In July, 1960, two young left their nest with two more in October, 1960, and one in August, 1961.

I have a Peach-faced Lovebird which is completely red, but with the rump blue. I seem to think that with age some of these Lovebirds become partly or entirely red and doubt whether they will breed. I also have a pair of completely white (not albino) Red-vented Black Bulbuls. They are lovely birds, white with red vents. About a couple of months ago I was offered a very young, not fully feathered, blue Alexandrine but the bird died before it could be delivered to me. I have a number of very pretty Red Avadavats in the following colours, black, (some do get black with age), pied, white-headed, white-cheeked, and the prettiest of them all, light fawn birds with red breasts.

Due to unsettled conditions I was unable to build the aviaries I had planned for my Cockatoos of which I have a number of species and which are at present in cages 3 × 2½ × 2 feet. A White-crested Cockatoo was continually laying since 1955 and I decided that something must be done for this pair. I built an aviary and released the birds end of May, 1961. On 11th October, 1961, the hen laid an egg in a large wooden barrel and another four days later. By about 20th October, 1961, the barrel was pulled to pieces and the eggs broken. I then put in a small water-boiler which they inspected and tested, but there was no question of breaking up this nest. On 12th December, 1961, the hen laid an egg and another a couple of days later. Because of the cold spell I knew the eggs would not hatch as it was the same with all my other birds. However, on 5th and 7th February, 1962, two more eggs were laid. On 9th March, one of my workers told me he had a dream that one of the eggs had hatched. Of course I promptly told him that he was a silly ass and should have dreamt that both the eggs had hatched! Sure enough, his dream came true as next morning, 10th March, 1962, we saw the young one. This event according to my men was a "Burra Deen", big day, and there was no way out of it but for them to celebrate at my expense! The water-boiler, with the lid off for the entrance, was laid on its side and slightly raised in front. It was filled some four or five inches with coarse sawdust and wood chips but most of this was thrown out and part pushed towards the entrance. The young one is never left alone and every time either of the parents leaves the boiler to feed, it is most amusing to see them peep through a hole at the bottom end where the tap used to be before entering. The youngster is now a few days over a month old and has a number of tiny feathers growing.

Leo A. Ara.

* * *

CORRESPONDENCE

WHITE EYES AS "HOMING" BIRDS

My recent articles about White Eyes breeding at liberty in Norfolk have prompted a number of inquiries into the suitability of this species for homing experiments.

In my experience White Eyes are intelligent, adaptable, and self-composed little birds, inexpensive to buy and maintain and inseparably attached to each other. Their small size, quick movements, inconspicuous plumage and arboreal habits protect them from the vandal's air-gun and minimize the risk of predation by cats and other ground vermin.

Provided there are trees nearby and one has a well-established true pair in breeding condition, familiar with the view from the aviary and addicted to a certain food (in this case nectar) there is no reason why anyone should not experience the sheer delight in having White Eyes flying free during the summer months.

It is undoubtedly an advantage to keep at least one other specimen in captivity to act as a call-bird during the initial stages of their freedom and advisable to release one bird of the pair some days before the other to explore the neighbourhood before returning to its mate and the feeder.

As White Eyes are great bathers the provision of a shallow dish of water will offset any temptation to bathe in water-butts or other dangerous places.

On no account should they be caught-up or handled.

As the nests are attached to leaf-stems it is best to wait till late May or June when the foliage is well-developed and it is certainly imperative to re-admit them to the aviary before the gales and frosts of autumn, or any possible post-breeding wanderlust makes itself felt.

R. A. Richardson.

Cley,
Norfolk.

MUTUAL PREENING BEHAVIOUR

I thought it may be of interest to mention the mutual preening and behaviour of two birds in my possession, a cock Chinese Painted Quail (*Excalfactoria chinensis*) and a cock Firefinch (*L. senegala*). The Firefinch initiates these preening periods, preening the Quail mostly on the head, for up to three minutes, sometimes perching on the Quail's back. The Quail's preening of the Firefinch, however, is of briefer duration and not always reciprocal.

Some time ago I had a Java Sparrow (*Paddy oryzivora*), which frequently perched on the back of a Necklaced Dove (*Streptopelia chinensis*), although no preening took place, but I have been told that Java Sparrows are noted for this habit when kept with Doves.

Jeffrey Trollope.

37 Station Road,
Hounslow,
Middlesex.

* * *

The Editor does not accept responsibility for opinions expressed in articles, notes, or correspondence.

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Council has decided that, with a view to economy, no List of Members will be published this year.

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AVICULTURAL MAGAZINE



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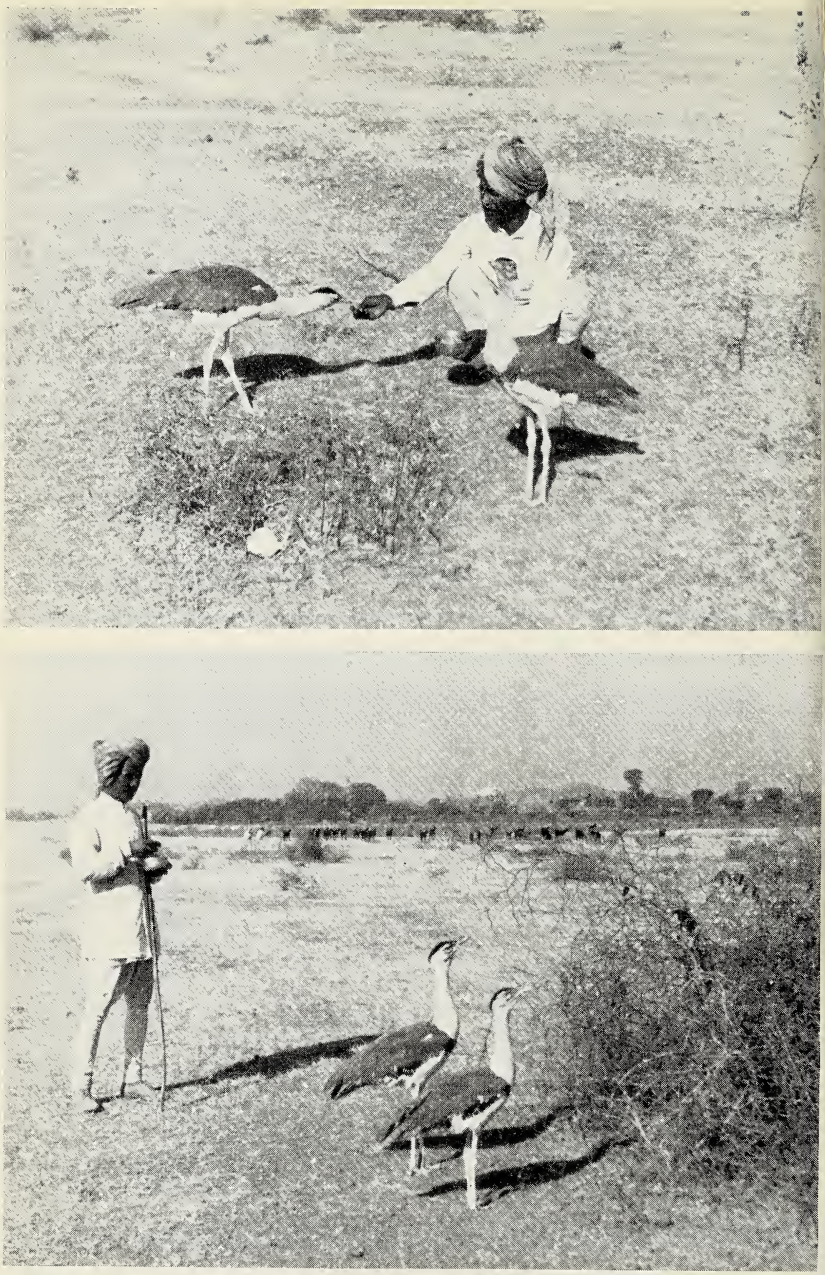
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Young Great Indian Bustards
($4\frac{1}{2}$–$5\frac{1}{2}$ months old)

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

Vol. 69.—No. 2.—*All rights reserved.* MARCH-APRIL, 1963

REARING GREAT INDIAN BUSTARDS

(Choriotis nigriceps)

By K. S. DHARMAKUMARSINHJI, F.Z.S., M.B.O.U. (Dilbahar, Bhavnagar, India.)

Many years ago at home one of our Falconer-cum-Dog boys was given a two-week old Great Indian Bustard chick to rear. This he successfully did, but no notes of the upbringing were made. The chick seemed to have flourished on all kinds of foods the boy ate himself.

Last August, I was given a Bustard fledgling which I presumed was about a month old. A brief description of it, is of interest. Crown, black with fawn coronal streak ; supercilium, pale buff ; upper-parts, brown with black and buff spots ; neck, fawn, finely vermiculated or barred with dull black ; throat, buff. Lower-parts, buffy with ochre undertail-coverts ; tail, pale greenish-grey ; primaries, slate ; secondaries, grey, flecked with white and buff ; wing-coverts, spotted with buff and tan. Eyes, iris pale yellow ; bill, horny and ivory-white with egg-tooth whitish. Weight, 1¾ lb.

The chick became hungry after two hours of capture and was force-fed on grubs and earthworms. Subsequently, it was fed on raw minced meat three times a day. On the third day it took food on its own but was still force-fed for four more days. The chick emitted a short shrill " kaon " and when alone twittered repeatedly. When disturbed it sounded a throaty " gha ".

For over a month it was fed on minced meat, green leaf which it picked up, locusts, grasshoppers, other insects, and prawns, all of which was given to it by hand. It sometimes took rice and green peas. From the early stage it swallowed grit. I kept a keeper to look after it, whom it recognized and followed.

A constant twittering whistle when left alone appeared characteristic. When hungry it came to the keeper's feet ; it was then fed by hand, after which it sat on its tarsi or walked searchingly. Attempts at feeding on its own were made, and it was seen to catch minute insects, caterpillars, earwigs, centipedes, and small butterflies. In a month's time its weight had reached 2¾ lb. The wings were clipped as it could fly. The colour of the legs was fleshy-white and the soft neck feathers commenced dropping.

The chick's habit was to take frequent dust-baths ; rubbing its neck sideways and puffing out the neck and crown feathers ; then it would suddenly spring to its feet to stand erect motionless for a second or two. At times the wings were ruffled to take in dust. During the process of rubbing its neck in the dust, the body angle was slightly tilted and the chick gave an impression of being in pain as it squirmed in the dust. Later when it suddenly jumped up and stood, it often gave itself a good shaking, raising the mantle and scapulars, a common habit often seen in adult Bustards. The stretching of one wing and leg was also observed. When a goat or large bird passed by, the chick raised its tail and spread out its wings in a threatening manner. This threat-posture was sometimes accompanied by a hiss or " gha " with the crown and neck feathers puffed. This display was seen in play also. The peculiar thing about it was that the bird's display was so sudden and ceased as suddenly as it had commenced. This threat-display which appeared like a dance when the bird turned round, was seen more frequently at a later stage.

When seated, the chick kept one leg slightly in front of the other and it often moved forward or turned while still resting on its tarsi. When preening, the chick invariably closed its eyelids. In the second month, a new coat of smoky-grey feathers appeared on the neck, and blackish feathers were seen at the sides of the breast. Blackish-brown feathers grew on the wing-coverts, forming a chequered pattern of black and tan on them. A white spot above the wing-shoulder also showed itself clearly. The lower-parts became buffy-white.

Another Bustard chick was obtained in September and this fledgling was presumed to be about three to four weeks younger than the first. It weighed 2¼ lb. Although much the same colour and pattern as the first, it had a shorter and thicker neck ; paler and broader supercilium ; the crown was black tipped with buff edges to feathers ; bill, bluish-grey with egg-tooth whitish. Eyes, iris, earthy-brown ; legs, greyish or plumbeous. The chick was placed on same diet. It was shyer and made frequent efforts to escape. It made less sound though making the characteristic twittering and was less demonstrative.

Both young drank water profusely from a cup. The manner was to sit on the tarsi and sip, sucking water like in the Columbidae. Basking was done by sitting or lying flat with one or both wings spread out. In the sun the gular movement was often noticed.

In November, Chick 2 grew rapidly reaching same size as No. 1. By December, it had exceeded No. 1. This was rather extraordinary considering it was only three-quarters the size of No. 1 soon after it had arrived. All in all, a sexual difference was suspected. The neck assumed lighter greyish-white, with very faint barring while the breast showed a blacker and broader band ; flanks were also whiter than No. 1 which had a pale buffish tinge. Tarsus and toes were larger. Both

young now had full black crowns with a greyish hue and a short crest. On the upper-parts, the buff spots almost disappeared and a more uniform sandy-brown colour was seen, the black markings scanty only on No. 1 Irides became paler. The remiges are a bluish-grey flecked with white and a conspicuous patch of white on the centre feathers. Both young fly easily and enter into mutual play.

Owing to lack of natural food, I have put both birds on a pellet diet consisting of: Chopped meat, 90 per cent; crushed gram flour, 5 per cent; ground carrots, 2 per cent; butter fat ½ per cent; boiled egg, 2 per cent; vegetable leaf, ½ per cent; fortified with Vitamin A and D.

In voice, No. 1 emits a peculiar short throaty " wut-wut-wuturr ' repeated quickly and which appears to denote affection; it is reminiscent of the alarm note of *Grus grus*. The plaintive twittering is less conspicuous and seldom heard. Chick No. 2, more silent, sedate, and shyer, utters frequently a short whistle and a drawn-out whistle which is reminiscent of the courtship song of the Painted Snipe (*Rostratula benghalensis*). Both emit the " gha " but No. 2 emits a sobbing " Woo-ooo-ooo ' when handled.

Both young have excellent eyesight, equalling the Goshawk and react to birds of prey flying at great height. They react to eagles by crouching or by threat display when an eagle flies low over them. Disregarding kites and now vultures, they show vent to eagles, buzzards, and hawks, and become alert at the sound of the alarm signals given by other birds. The threat posture is often triggered by a bird flying high over, or by a flying insect such as a dragon-fly, or by a bird alighting close by, or even just sometimes without any special cause.

In taking flight, both birds take a step or two and while taking off the legs are drawn up and then stretched out behind. When alighting a short glide is seen. Flapping of wings is done as exercise, and the feet are often lifted from the ground when doing so. Both birds play with small objects, sticks, small stones, manipulating them with their bills, and keep themselves very clean. They had from the start, a liking for swallowing white shiny objects or pebbles which they pick up with much rapidity. Such pebbles and pieces of glass are expelled regularly in the faeces. Both birds eat about ½ lb. of food daily. They are mostly hand-fed and are given daily morning and evening walks, after which they are penned in a small roofed enclosure with wire netting in front. No. 1 stands 28 inches and weighs 6½ lb. and No. 2, 35 inches and weighs 8¾ lb. on 7th January, 1963. No. 1 has more distinct vermiculation on the upper-parts and neck than in No. 2, which has whiter breast and belly, thicker neck feathers, blacker breast-band, and rich brown, almost turning to rufescent, at the base of hind-neck. No. 1 has a tinge of fawn on lores, face, chin and throat with a duller supercilium. In the manner of taking food No. 1 has a soft mouth, tasting its food

frequently, protruding its tongue, and gulping smoothly ; in contrast No. 2 has a hard mouth and swallows food jerkily like a duck. More observations are being made as the birds grow.

The Great Indian Bustard is protected in India as it is becoming quite rare. The first Zoo in India to obtain an adult pair of this species is the Bikaner Zoo in Rajasthan. The pair is thriving well.

* * *

NOTES ON BLACK-NECKED SWANS

(*Cygnus melanocoryphus*)

By R. A. Copley (Hemingford Grey, Huntingdonshire, England)

A pair of Black-necked swans were acquired in 1960, and they were immediately introduced to an area of water of about 1½ acres and plenty of grass. The male started coming up for food almost at once, but the female seemed to be very unhappy and was all the time trying to get out. It paid no attention to the other swan or to any of the other birds on the water. Day after day it was seen on its own, sulking in a corner, and every endeavour was made to get it to eat or to take some interest in its surroundings.

Soon it seemed to be very weak and almost unable to stand and when it was caught and put in a confined space it still refused to eat and would only drink a little water. The male would not take any notice of it at all.

It appeared quite clear that the female was very unhappy and would die unless its circumstances were changed, so it was sent back to where it came from. Unfortunately it was not given a chance to rehabilitate itself and was promptly killed to see if it had any disease. The report was that it had no disease.

Another female was obtained from the same source and this was put in a confined space separated from the male by a piece of wire netting. Very quickly he came up to take notice of the new bird and for several days they remained side by side with only the netting between them. Directly the wire netting was removed they both went into the lake and have been inseparable ever since. In 1961 the fence dividing the lake was opened and they had five acres of water and islands.

In early 1962 it was seen that they were making a nest on one of the islands, so hay and straw were supplied. They then made a big nest and laid five eggs, three in due course hatched off, two being unfertile. The young ones were soon being carried on the backs of the male and female and it was thought that they would be safe on the

island they had chosen ; but in a few days time it was noticed that only two cygnets remained and before anything could be done only one cygnet was left.

The parents with their one cygnet were confined to a small area of water and a clear piece of sandy land. The two cygnets on the island were found mutilated and eaten by some predator. The parents took great care of the cygnet and it always rested on the back of one of them underneath the fold in the wing even when it was grown to half size.

Shortly after this another egg was found on a few scraps and sticks that had been collected ; so immediately hay, straw, and grass were provided and another large nest was made in the restrictive area and five eggs in all were laid. The female started to sit and, in ignorance, the cygnet was allowed to stay with its parents and every evening it was seen sitting on the nest beside its mother and everything seemed to be satisfactory.

Early one morning the cygnet was seen to be in great trouble some distance away from its parents. When caught it was found that its head was badly swollen and one eye was very damaged. To ascertain what had happened the cygnet was put near the nest with a piece of wire protecting it. The cause of the injury was soon discovered because the male tried many times to hit the cygnet with its wing and it appeared only too clearly that the instinct of the father to protect its offspring had been wiped out by its instinct to protect the female and the nest. When any nest making begins again, the cygnets will now be removed to safety.

The cygnet was taken away and put with some bantams and other chicks for company but it seemed to have lost its balance. It fed and drank a little and its head appeared to improve but it seemed blind in one eye due to the injury. It gradually grew weaker until it died.

In due course of time two cygnets were hatched off from the second sitting and these are doing well and their neck feathers are beginning to go black.

It is noted that when the cygnets are growing to their full stature they are very unsteady on their legs and if they are frightened their legs give way and appear to lose all strength.

It is understood that it is quite rare for Black-necked Swans to raise two broods in one year and it will be interesting to see what happens in 1963.

The male bird appears to be rather antagonistic to any other white birds on the water, particularly a pair of Muscovies, but as these can fly no damage is likely. He sometimes objects to one of the Emperor Geese.

One interesting trait is his wonderful eyesight. He often notices the writer looking at him through a window and sets up a cry immediately.

He also loves to show off by skimming over the water at great speed and as he reaches the bank where you are standing, he dives, almost standing on his head. He never appears to get tired of showing off in this way.

Generally it has been very interesting to study the love life of Black-necked Swans and this year it is hoped to get a cinefilm of the courtship.

* * *

NOTES ON AUSTRAL AND SOUTHERN PACIFIC BIRDS

By J. DELACOUR (Clères, France)

Australia, New Guinea, New Zealand, New Caledonia and the South Pacific Islands were the last part of the world I had never visited before. As years are passing fast, it was essential not to delay too long a trip to this fascinating area, so long isolated from the larger land masses that the flora and fauna possess a highly peculiar character. I therefore left Clères early in September, 1962, and after a few days at Singapore, where I was the guest of the well known ornithologist and bird photographer Dato Loke Wan Tho, I arrived at Perth, Western Australia, on the 10th September.

My excuse for writing the present notes for this magazine is that many Australian birds, in particular, are not only very different from those of the rest of the world, and extremely attractive ; but they also number among those which have long been the most popular with aviculturists. Cockatoos and Broadtail parrakeets, pigeons and doves, geese and ducks, as well as grassfinches, to name only the most familiar, have been early aviary favourites as they add to great beauty the advantage of being fairly hardy in Europe and in North America, where they breed relatively easily. I hope therefore that some recent observations concerning them will interest our readers.

Australians and New Zealanders are enthusiastic and experienced aviculturists, and it was my privilege to visit some collections. I wish I had had time to see more of them, which I hope to do in the near future.

I.—WESTERN AUSTRALIA

Perth is a large and attractive city, and the Swan River estuary expands into salt-water lakes, along which runs, high on a hill, a vast park where the native vegetation has been well protected, to the advantage of numerous native birds. Small swampy lakes have very fortunately been preserved in the suburbs, so that one can see there,

close to houses, an excellent sample of West Australian water birds : two species of Cormorants, Coots, Porphyrios, Black Moorhens, Black Swans, Grey Ducks, Grey Teal, White-eyed and Blue-billed Ducks, and even the curious little Pink-eared Ducks. The only pigeons seen there are the introduced Senegal Palm Doves. The familiar Australian passerine birds are much in evidence in park and gardens and one Parrakeet, the Port Lincoln (*Barnardius z. zonarius*) is very common. The population at Perth is somewhat intermediate between *zonarius* and the larger *semitorquatus* found farther south.

I was met at Perth by Mr. and Mrs. W. J. Sheffler, my old friends from Los Angeles, who accompanied me throughout Australia. Dr. D. Serventy, the well-known Australian ornithologist, not only kindly showed us birds in and around Perth, but he also had arranged for a comprehensive 3,300 mile tour by car of the central and southern parts of the State.

West Australia probably contains the most varied and showy wild flowers in the whole world, and September is the best month to see them in all their glory. The Australian flora is dominated by the Eucalyptus, which give the country a very special aspect ; growing to a very large size, they usually have a small and light canopy which provide little shade, so that there is a rich undergrowth ; there are hundreds of different species, but all of them, large or small, present these characteristics. It makes it easier to see birds.

We went first north, through the light eucalyptus forest, then the savannah country, most of which has now been changed into wheat fields. Farther north-east, we found the " mulga ", an arid area more or less thickly covered with stunted acacias and other desert growth ; we went as far north as Kathleen Valley. Afterwards we drove south to Kalgoorlie and reached the southern coast at Esperance. On our way to Kathleen Valley, through Wubin and Mount Magnet, we saw in the wheat belt our first Roseate Cockatoos, the Galahs as they are locally called. Although very common in all the cultivated and open parts of Australia, they remain one of the most attractive birds one can watch. They are usually walking on the ground, feeding or on the wing, when they look at their best ; sometimes they perch on fences, wires or trees ; also one sees them coming in and out of hollow branches of eucalyptus. Australian Magpies, or Piping Crows and Butcherbirds are always numerous. European Goldfinches abound, more numerous and tamer in Australia than in their native countries. There are here and there brackish ponds, where Black Swans and Australian Shelducks live ; the latter had broods of young. Straw-necked Ibises are met in flocks ; these fine birds are never molested, as they destroy many harmful insects, and they are common all over Australia. As we went north-east, Red-tailed Black Cockatoos and Corellas (Bare-eyed Cockatoos) became more numerous, usually

feeding in the fields. Port Lincoln Parrakeets were still numerous, but Rock Peplars appeared here and there, and in the dry country, we saw one Queen Alexandra's and several Bourke's Parrakeets. Emus and kangaroos (Red and Euro) began to show up here and there. But they have been, and still are, terribly persecuted and ruthlessly slaughtered by sheep farmers, as is the Wedge-tailed Eagle, which we never saw once in that part of Australia where it used to be very numerous.

We spent two delightful days at Yackabundi, Kathleen Valley, the home of Mr. and Mrs. Bob Adamson, who farm a very large sheep station, in this arid, semi-desert district. The big house is surrounded by a lush, irrigated garden. Birds recognize its tall trees and green shrubs as an oasis. Budgerigars come by the hundreds, Galahs swarm around the farmyard. Each morning, I could watch a hundred Crested Pigeons (*Ocyphaps lophotes*) feeding with the poultry, Mud Larks (Magpie larks) abound as everywhere else in Australia, and there were many other birds around. Away in the desert we could find the Western Bowerbird and its bowers, and the curious Quail Thrush ; lovely Red-capped Robins nested in the garden trees. Port Lincoln Parrakeets also were there.

The southern coast is picturesque and rocky, and the islands off-shore are the western home of the Cereopsis goose which never inhabits the mainland. The country is green and very cool at that season, and the wildlife quite remarkable. On the way west to Albany and beyond, there were pairs of Maned geese, Grey Ducks, Plovers, White-faced and White-necked Herons around pools ; Stanley Parrakeets were frequent, as also the large, crow-like, grey Currawongs (*Strepera versicolor*). The introduced Kookaburra was commoner over there than in its native east. We came across several flocks of White-tailed Black Cockatoos, high up in Eucalyptus forests ; we once counted 134 in a flock, including young birds still fed by their parents. Pelicans were frequently seen near the coast.

The great interest of Albany, as far as birds are concerned, consists of the presence in its vicinity of the Noisy Scrub Bird (*Atrichornis clamosus*) in the thick, short brush which covers the slopes of the hills along the ocean. Mr. H. O. Webster, its recent (1961) rediscoverer, took me through the scrubland to his small cabin near Two People Bay. Just outside, as we landed from the car, I heard a beautiful song, similar to that of the nightingale, but fuller, louder and more varied. A narrow path wound through this part of the brush, above which stand a few scattered trees. There is a worn run across the path, such as a rodent or a weasel would make ; but it actually is that of the Scrub Bird. This particular specimen, used to human observers and probably intrigued by them, starts singing and also moving about as soon as he hears anyone. It eventually crosses

the path along its run, and all one has to do to see it is to wait a few yards away. I saw it twice, a small, brown bird, with an erect head, thin neck, high held tail and short legs, running like a rat, deliberately and without fear. It general aspect, proportions and movements clearly indicate its peculiarity, which is proved by its special anatomical features. Prior to Mr. Webster's observations it had not been seen since 1889 and was therefore considered extinct. It is probably still fairly numerous in the impenetrable scrub of the coast, which is now being proclaimed a sanctuary.

Two other very rare birds were seen and heard in the area : the Black-throated Whip-bird (*Psophodes nigrogularis*) and the Bristle Bird (*Dasyornis longirostris*). The weather was bad during our visit—rain and a cold wind. Mr. Webster is an excellent photographer of birds' nests, but he has not yet been able to find that of the Noisy Scrub Birds ; he has only seen the female on two occasions. But he will no doubt soon succeed.

West of Albany, on the way to the western coast, we crossed the magnificent forest of giant Eucalyptus, Karris (*E. diversicolor*) and Yarrahs (*E. marginata*), the former as large and tall as the great Sequoia Red Woods of the California coast. Stanley Parrakeets were numerous, but we only saw a few Pileated (*Porphyrocephalus spurius*). Brush Bronze-wing Pigeons were not uncommon among the shrubs and trees along the coast.

The best private collection of live birds which we saw near Perth was that of Mr. Theo Peters, who has a large, well planted aviary and several smaller ones. The most interesting birds were several species of the magnificent Blue Wrens of the west and the lovely Red-eared Firetails, a beautiful Waxbill-like Finch of the south-west, rare in captivity and very difficult to keep ; there were also Scarlet Chested Parrakeets, Plumed Doves and several other Finches and Softbills, all in excellent condition and perfectly kept. There are a number of smaller collections most of cockatoos and parrakeets.

The Perth Zoo is not very large, but it is attractive and well kept, and it has very good collections of local birds and mammals. It must be remembered that importation into Australia of any foreign birds has been prohibited for years, so that zoos and aviculturists have to concentrate on the local avifauna, which, fortunately, is one of the best in the world. The cockatoos and parrakeets are particularly well represented at the Perth Zoo. They are well housed and cared for, and many breed each year. There are a few birds of prey in perfect condition, and interesting waterfowl, doves and passerine birds.

(*To be continued*)

* * *

OBSERVATIONS ON JAVA SPARROWS

By Derek Goodwin (London, England)

Introduction

My Java Sparrow keeping has not, as will appear, been very extensive or successful. As, however, I have been unable to find any detailed notes on its behaviour in English books or journals I feel justified in offering my own scanty observations on this interesting, beautiful and cheap bird, together with references to some relevant observations that have appeared in German publications.

The Java Sparrow (*Padda oryzivora*) also known as Ricebird, Java Finch and, to the romantically-minded American aviculturist, as Java Temple Bird is endemic to Java and Bali. It occurs widely elsewhere in south-eastern Asia but in many places is suspected of having been introduced. It is one of the largest estrildines and (as most readers will know but I shall describe it for such as do not) extremely beautiful. About the size of a Goldfinch but very different in head and bill shape. General colour soft bluish-grey, mauve-pink belly, head black with white cheeks, rump and tail black and a very large bill which is pink to pinkish-red at the base and whitish-pink at the tip. There is also a domesticated variety which is white or pied in colour. The domestic form is said to be easy to breed but as its price never drops below £5 or £6 per pair (about six times as much as the far more beautiful wild form) it seems unlikely that it can be really prolific. The very scarcity of white Java Sparrows when compared to the numbers of the other two domesticated estrildines, the Zebra Finch and the Bengalese Finch, which are to be seen in every bird shop, shows as clearly as anything could that it cannot be so easy to breed as other domesticated species are.

It would appear that, contrary to what is the case with Bengalese Finches and Canaries, it is impossible to produce wild-coloured domesticated Java Sparrows by pairing pied individuals together. At least I have never heard of it being done or seen domesticated greys offered for sale.

History of Individuals Kept

In my early 'teens I bought a " pair " of Java Sparrows, for the modest sum of 2*s.* 6*d.*, and kept them in a large outdoor aviary with a small shelter attached, in company with Turtle Doves and various small passerines. These Java Sparrows never showed any signs of nesting and were probably of the same sex. It was not until the summer of 1961, that I again kept Java Sparrows. I had for some time been making intermittent observations on such specimens as I had seen in

zoos and bird-dealers' establishments and, one day seeing two in a cage full of Budgerigars in a local pet shop, I bought them.

They were placed in a cage about 3 by 3 by 4 feet high and once they had got used to their new home were allowed to fly free about the upper part of the house for at least two or three hours every other day. One soon revealed himself to be a male by his frequent song and display. The sex of his mate remained a mystery, however, as the second bird never showed any behaviour that could be interpreted as definitely either feminine or masculine. From the size of its bill it was most likely a male. Early in December I visited the " Crystal Palace " show. Looking round the dealers' stands I saw at that of the Toddington Bird Farm a cage with about a dozen Java Sparrows. One (and only one) of these was an obvious hen, being very small and neat with (for a Java Sparrow) a very small, pale-coloured bill. Moreover she had about her something of that indefinable " sweetness " or " placidity " of expression that one sees on some female pigeons (of all species) and which always indicates that the bird showing it will be more easily tamed and less nervous and panicky than others of its species. This will sound nonsense to the non-aviculturist but anyone of experience in keeping pigeons and other birds will know what I mean. With some difficulty, but no objection, the proprietor managed to catch this individual for me from among the fluttering mêlée and also another bird which I thought might do as a mate for her. Since I was reluctant to part the original " pair " if it could be avoided.

The original pair showed hostility to the newcomers though this decreased in intensity in a very short time. The two newcomers showed, to my surprise, not the slightest tendency to pair or even associate closely with each other. The old pair, including the male, were equally hostile to both. It became very evident that if I was to get any observations on the breeding behaviour of the Java Sparrow the only course was to split the original pair and keep only the two birds known to be a male and female. Moral scruples against splitting the faithful old pair thus came into conflict with scientific interests. I fear I need hardly tell my readers that, as is usual in such cases, moral scruples soon went by the board. I gave away the new (presumed) male and the bird of unknown sex and kept the female and the undoubted male of the original pair.

Left with only the hen for company the male did not immediately succumb to her charms. He called loudly and frequently for his former enigmatic mate, sang at very frequent intervals and although he did not actually persecute the female he repulsed her in no uncertain manner whenever she tried to approach him closely. At night they slept in different nest-baskets on opposite sides of the cage. This state of affairs continued for about ten days. Then, on the morning of

24th December, I saw the female hop along the perch towards the male. As she drew near him she greeted him humbly, lowering her head right to her feet. He, although not responding courteously to the greeting, did not repulse her, she cautiously drew close against him and they sat side by side for (so far as I had seen) the first time. That night was certainly the first time they roosted together, the female having probably taken the initiative over this also, as they roosted in the male's basket, not hers.

Within a few days they were firmly paired, constantly greeting one another with the tail twist and head bow and the male frequently giving his courtship display and song. On 15th January I noticed that a piece of string had been carried into the cage by the birds, who had been free of the house on the previous day. I put some lengths of string and some long dried grass on the floor and the cock soon carried some into the nest-basket that they did not use for roosting. For the next few weeks the birds spent much time building and copulated frequently, but by the time the first egg was laid on 11th February, only the barest apology for a nest was inside the basket. The pair began to sit or at any rate to take turns inside the basket, but it was obviously a very unsatisfactory nest and they soon began to lose interest. By the 16th they had clearly deserted and when I emptied out the basket I found two eggs, together with only a few odd whisps of grass and a feather or two.

This nesting failure seemed to be due to the basket (one of the ordinary " foreign finch nest basket " type) being too small. The closeness of its sides around them evidently provided the Java Sparrows with the same stimulus as would a nest with the outer shell already built. Hence, for the most part they had taken only nest-lining materials and these had been constantly knocked out of the nest when the birds hopped in and out. I removed the basket and substituted a plastic basket (one used for shaking washed lettuces dry, I believe) about 7 inches in diameter. I cut a hole in one side and threaded a few twigs and bits of grass among the plastic bars to give a bit more cover. At first the birds viewed this addition to their world with fear and suspicion but they soon got used to, and, then investigated it, and before the end of the month had begun to build in it.

I think the first egg was laid on 3rd March. None having hatched by 23rd March I feared they were addled or infertile. I removed two eggs and, foolishly, broke them open. The first was infertile, the second, to my sorrow and anger, contained a live young one, which was evidently not due to hatch for several days. There were still four more eggs in the nest and when I replaced the nest the parents soon returned. On the 24th I could feel one young one in the nest. On 26th all the remaining eggs had hatched. For a few days all went well, or at least appeared to do so. The parents were assiduous in caring for their

young. On the 26th I took a nestling out to look at it. It was light pink with the feather tracts showing grey under the skin on the wings only. Most of its bill was blackish, but it had a broad creamy-white gape and gape flanges. The inside of the mouth was pale pinkish *without* markings. It was plump and healthy, its crop contained millet and a few bits of broken rice or broken peanut.

On 1st April a friend who had looked after my birds that day told me that he was worried as the cock Java Sparrow had looked unwell. He was only too right in his fears. Early on the 2nd I found the male moribund on the floor and he died within half an hour in spite of attempts to revive him with heat. The female did not look well either. She appeared weak on her legs and, although feeding the young, she obviously was not giving them enough as they called loudly and continually for food ; which they had never done before. Previously I had only heard them call, not so intensely as now, when they were actually being fed and in the early morning before their first feed of the day. I tried to force feed both the female and the young with some beaten up raw egg. With little success ; the female indeed looked worse after my ministrations than she had before. Then I had to leave the birds (first putting on a second heater in their room) and hope for the best.

When I returned at 5 p.m. all the young were dead. Apparently of cold through the hen not brooding them as they showed no signs of emaciation and two of them still had some of the egg I had fed to them in their crops. The hen bird looked much better and had begun to call, a sure sign that she was no longer seriously ill. How strange it seems to us that the same estrildine that is greatly upset and calls constantly if out of sight of its mate when well, is silent and does not even answer its mate's calls if it is seriously ill. At a time when one would have thought the mate's presence might be most desired it is no longer of any importance and the sick bird dies alone or, if it recovers, only *then* begins to seek to re-establish contact. One can see the biological utility of this behaviour but this does not lessen its pathos.

I sent the cock bird for a post-mortem which diagnosed a blood clot on the head. However, I feel certain that the real cause of the trouble was nutritional. The diet that Java Sparrows, or at any rate my Java Sparrows, will take in captivity is, perhaps, sufficient to keep adults in health but as soon as the bird is feeding young (because it then consumes less food itself or because some nutritive secretion is fed to the young ?) it is no longer getting enough of some vital element. The fact that the hen was obviously " going the same way " as the cock but quickly recovered as soon as she gave up parental cares makes it pretty certain that the cock's blood clot was a symptom rather than a cause of his condition.

Next day the hen looked as fit as ever. For some weeks I kept her

alone, then, instead of being sensible and searching round until I could find a reasonably steady male for her I accepted a friend's offer of a Java Sparrow which he thought was a cock. In this he was correct, the bird proved a male in good condition and of a particularly bluish colour in its grey parts. Its beauty and fitness were, however, its sole recommendations. It was excessively wild and when, after about three weeks, it paired with the hen (for Java Sparrows seem, in my limited experience, much more reluctant to accept a substitute for a lost mate than are pigeons or waxbills who seldom lose much time grieving for the late loved one if an adequate replacement is to hand) she soon became wild " in sympathy ".

I was thus able to get far fewer observations on this second male and the hen's behaviour with him. After I had had them together for about a month they were free together in the house one day and evidently found a window which had been inadvertently left open and escaped through it. I felt a greater guilt at my carelessness which had caused their almost certain death because I could not feel entirely sorry at having lost them.

Feeding and Food Preferences

This information is given for interest not example since, as has been shown, it is highly likely that the feeding of my birds was inadequate. It is hoped that any who have been successful with these birds will make known their own feeding methods in our magazine.

My Java Sparrows, so far as I saw, ate nothing but paddy rice if given a free choice. If paddy rice was not available they freely ate canary and millet seed. Soaked and germinating (or dry) spray millet they would eat in some quantity if it was tied near their perch so that they did not have to fly down to the floor of the cage. If they had to do so then they preferred to take paddy rice from the dish. Seeding, flowering and newly growing grasses, chickweed, lettuce, knotgrass, mealworms, and maggots were left untouched. Ripe or unripe wheat or oats in the ear were taken readily, at any rate if they were tied temptingly near a perch. Considerable quantities of sand, mineralized grit and crushed baked eggshell were taken. The seed was treated weekly, rather more often in winter, with halibut oil.

Prior to their commencing to nest I had, rightly anticipating that their diet would lead to disaster if they tried to rear young on it, tried to coerce them into eating other foods, inspired by the sight of a Java Sparrow in a zoo eating peanuts. This was successful to the extent that very small quantities of broken peanuts and sponge cake (home-made, with eggs) were eaten. However, these foods were never touched until the birds were looking very dejected from hunger, only small quantities of them were taken then and the moment dry seed or paddy rice was available all other foods were ignored. Radtke, who

successfully reared young from a white male and a captive-bred grey hen, found that his birds refused soft food, live food and sprouted oats but ate and fed to their young large quantities of chickweed. My own pair fed quantities of soaked spray millet to their young, but continued to ignore other supplements to their dry rice diet.

The species is said to eat insects in a wild state but I know of no detailed study of it in freedom. However, at least one other estrildine—the Gouldian Finch—which habitually refuses live food in captivity, feeds its young largely on insects in a natural state (Immelmann, 1962) so that it would be unsafe to deny that the Java Sparrow may do likewise.

Voice

My notes on this subject are tentative, especially as regards the function of the various calls. They are, however, at least more complete than are such other accounts of the voice of the species which I have been able to find (and which I quote here when relevant) and will, I hope, serve as a foundation for anyone undertaking a more detailed study.

The Contact Call

This is the short, rather liquid " T'lŭk " or " Ch'lŭk ", monosyllabic, but usually repeated many times. It appears to function in maintaining or re-establishing contact between individuals. Possibly it might as well be termed a " flight-intention " call as it usually seems to indicate some degree of disquiet or alarm and readiness to fly away.

It is heard in many different degrees of intensity. Typically it is very loud and emphatic in birds which are separated from their companions or which take flight in alarm. If a pair are shut in different rooms both utter this call in answer to the same call from the partner. This call and the trilling call may intergrade. A German aviculturist sometimes heard this call given by a male White Java Sparrow when displaying (Radtke, 1959) and another says (Kunze, 1962) that the song consists only of repetitions of this call note. My own birds never gave this call when displaying but there would appear to be much individual (or racial ?) variation in song and perhaps some males do simply use repetitions of the contact call as their song. The alarm call appeared, to my ears, to be merely a very loud, " hard-sounding " version of this call, but further observations on this are needed.

The Trilling Call

A trill, of varying length, with a strong " r " sound in it and usually with rising inflection. May intergrade with the contact call but typically quite distinct from it. A very loud, hard, rattling, long-drawn version is given during successful copulation.

This call seems to be an expression of any form of apparently pleasurable excitement connected with reproductive behaviour. It is given by the female, possibly also by the male, when greeting the mate after a brief separation. When they bow in greeting to each other just after hopping out of the roosting basket they have shared when the light is put on in the morning. By the female when alighting near nest with a feather and *more* intensely a moment later as she enters the nest with it. Possibly the male gives it also in this situation but the male would always stop building if he noticed me watching. By one or both of pair during copulation, at the moment that cloacal contact was, apparently, achieved. *Not* given in attempts at copulation that appeared unsuccessful. Sometimes by female entering nest (without feather) if male already inside. As the female sometimes gave it while the male was giving other vocalizations I am quite sure that she uttered this call. I cannot be sure whether the male also gave the trilling call as at all times when I thought he may have done the female was very near to him. This call was uttered without any marked bill or throat movements.

I at first thought that the very distinctive version given in copulation ought to be considered a different call. However, a version intermediate between the " normal " high-intensity form of the trilling call and the hard, very long, rattling call given during copulation was heard several times when artificially induced in the following manner. If I shut the male in a different room for an hour or so and then let him fly back into the other room this intermediate version would be given by the female while he was still in the air flying towards her. It was followed by very intense greeting display.

That the more usual (non-copulatory) version of the trilling call depends for its intensity and duration on the degree of excitement was also indicated by the female when taking feathers to the nest. She preferred fairly large, fluffy, white feathers and gave much louder, longer trills as she slipped into the nest (or alighted near it) with one of this sort than she did when she had only a small, dark-coloured feather.

The Moaning or Mewing Call

This call is very difficult to describe but quite unmistakable as, although it varies greatly in loudness, pitch and duration, it bears no resemblance whatever to any other call. At least not to any other Java Sparrow call that I have heard. It is a low-pitched moaning sound, sometimes inclining to a mewing sound, at high intensity so loud and long-drawn out as to be suggestive of some cries of the Herring Gull (the " mewing " cries) at low intensity only a very soft, intermittent moan. It always, however, has a very " complaining " tone, slightly querulous also at times but the " complaining " sound is

always present and so striking to the human ear as to tend to make one at once " jump to the conclusion " that it *must* be a note of protest. But this is far from certain.

On the only occasions when I am sure this call was given by the female of my pair (that is when the male was singing in the nest while she gave it) she gave it in a much higher-pitched and " sweeter " sounding form than that usually given.

This call was given when both birds were in the nest-basket at the same time. Usually it was uttered when one bird entered the basket in which the other was already present. Thus it was given when one of the pair entered to take over incubation of the eggs or brooding of the young or when one entered with nesting material when the other was already in the nest. It was not, however, confined to such reproductive situations since it was heard from birds going to roost, not only from the breeding pair but also from the male and/or his original (probably male) mate who had shown no signs of nesting. The most intense versions were, however, heard from the breeding pair while nesting. On very few occasions the male introduced short, low-intensity versions of this call into his song or it might be more correct to say interspersed his song with them.

I am uncertain as to the functions of this call or the exact circumstances under which it is given since (except when the male gave it while singing) I was never able to actually see the calling birds. It would seem likely that it has some appeasing function. It might even express an inhibited aggressiveness of a bird " resentful " at being crowded to one side or reluctant to leave its eggs. Since it is only (in my experience) given when both birds are together *in* the nest or roosting-basket it can hardly be equated with the nest-calling of other estrildines.

The ?Nest Call

I sometimes heard a very soft, repeated " tut-tut-tut-tut . . ." suggestive of a very tender, soft version of the contact call but with all the notes " run together ". Very suggestive of the nest calling of other estrildines. It was, however, only heard when both members of the pair were together inside the nest. Kunze (1962) says the hen Java Sparrow has a very pleasant nest call that sounds like " tuituituit " but does not give further details.

The Song

There would appear to be much individual or racial variation in the song of the Java Sparrow. According to Butler (1899) the songs of the wild grey form and the domesticated white form differ consistently. However, it is certain that there is much difference even between the songs of different wild caught birds. Thus I paraphrased the two

songs of my breeding male as " Chŭ-chillik, chŭ-chillik, chillik-eee " and " chillick-chillick-eee ". Pialek (1958) who bred numbers of the grey form in a large aviary describes the song as a very pleasant-sounding simple fluting song (" Ein recht wohlklingenden einfachen Geflote "). Musil (1960) reported that his Java Sparrows *hissed* at one another in courtship display (when the majority of males, like mine, apparently sing). Morris (1958) apparently studied a number of males (he does not say how many but infers a number was involved) all of which ended their songs with a very long-drawn whistled " weeeeeeee ". The song of my second male (the very timid one) was much softer, sweeter and rather more complex than that of the other.

Song is given by a male in breeding condition when he is alone or at any rate *out of sight* of the female and also in the courtship display. These at least are the situations in which song is almost invariably heard from a male in breeding condition and they parallel the situations in which most other estrildines utter their songs. Less often, however, the song may be given when in sight of the female and on several occasions I heard the male sing when both he and the female were in the nest together. Since there was no sound of jumping it is unlikely the male was then trying to display to the female. Possibly in the darkened nest the male may at times be unable to *see* the female and this may stimulate song (as it certainly does when the pair are outside) even though the female is with him.

Bill-snapping

A rather loud snapping or clicking sound, apparently made by snapping the mandibles together, was usually given by my breeding male just before beginning to sing in the courtship display.

Some Aspects of Behaviour

The Greeting Display

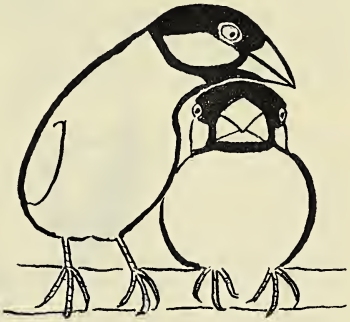
In this the members of a pair hop or sidle towards one another. As they come together they bow their heads to their feet or towards the other bird's feet then lift their heads, each in turn puts its head over the other's (see sketch), then they bow again. This may all be repeated several times. The trilling call (q.v.) accompanies or prefaces this display. At low intensity only the bowing movement may be shown and it may be merely " suggested ". One bird only may bow, one may bow more deeply than the other ; only one may put its head above the other's head.

This display is shown whenever the pair come together after some little separation. High intensity versions could always be artificially induced by separating the cock and hen (shutting them in different rooms) for half an hour or so and then allowing them to come together

by opening the intervening doors. On such occasions the greeting display would be immediately followed by the birds sitting pressed *very* closely together for some five minutes or more. It was shown also by my birds when they came out of their roosting baskets, the homologous displays of my waxbills of the genera *Uraeginthus*, *Estrilda*, *Lagonosticta* and *Amandava* is also shown as soon as I switch on the light in their room in the mornings. The sudden light is for the birds a situation rather similar to reunion after separation in that the members



(1) Java Sparrow in the bowing phase of the greeting display.



(2) Female self-assertively putting her head above that of her mate. This behaviour is also shown " in turn " during the greeting display.

of the pair suddenly see one another again after a period with no visual stimulus from the partner.

In the Java Sparrow (and probably in other species also) the lowering of the head probably expresses submissiveness or " inferiority " and the placing of head above or higher than the other bird's dominance or " superiority ". At least this appears to be their significance when they are performed singly. When they are combined in the full greeting display they seem to express rather mutual esteem or affection. The same is true of many other bird displays some of which incorporate very obvious elements of hostile behaviour (See Goodwin, 1956 for fuller discussion of this).

If this display were confined to the Java Sparrow one could suggest that the bowing of the head might be a ritualized aggressive movement as this species often bites at the feet of another bird when attacking it. However, as there are homologous displays in other species, including that of the Dark Fire-finch (*Lagonosticta rubricata*) which is extremely similar in form to that of the Java Sparrow, and these do not try to bite their enemies' feet, there seems no justification for postulating such an origin to the bowing of the Java Sparrow.

The Courtship Display and Copulation

The Java Sparrow has a display which is homologous to the bowing display of *Amandava* and the stem display of other waxbills (see Goodwin, 1960, Harrison, 1962, Kunkel, 1959). In this display the male adopts a peculiar bent-over posture. In this posture (see sketch) he bounces up and down on the perch, sidling nearer to his mate as he does so. His feet usually leave the perch at each jump and make quite a loud noise as they strike it again. His lowered head is above perch level



(3) " Bent-over " posture of male in courtship display.

most of the time and only slightly turned towards the female but every few seconds (but I think not at every jump) he lowers it more deeply till it is at or below perch level, at the same time giving a waggling movement suggesting an exaggerated symbolic " bill-wiping " and as he does this his head is turned rather more towards the female. His head plumage is arranged to make a " triangular head " but this is less marked than in waxbills ; his tail is twisted towards the female but again less so than in the waxbills.

As my male began to display he commonly gave very excited-sounding contact calls which become more intense as he adopted the bent posture and turned to loud bill clicking which in turn gave way to song as he neared the female. Often, the male began to display in silence and sometimes the clicking notes were altogether omitted. Always, however, the male sang as he began to draw himself more erect in readiness to mount the female even if he had not sung before, unless the female forestalled this (as she often did) by soliciting at an earlier stage of the display. Once the male had begun this display he would always respond to soliciting of the female by mounting her immediately, even if this occurred before he had begun to utter bill clicks or song.

The female's response to this display varies. Its most spectacular form is when she adopts the same posture as the male and bounces

up and down also with the same head movements. As the pair come together, or shortly after they have done so she goes from the bent over posture into the usual solicitation posture of hen estrildines, crouching horizontally with somewhat raised and quivering tail. The male then mounts and copulates. I saw this behaviour on two occasions from a pair of grey Java Sparrows kept in a window aviary by an airline company in Bond Street. Owing to the plate glass I could not hear if the female also called but she did not appear to do so. A pair of White Java Sparrows owned by Radtke (1959) are said to have invariably given this form of display and response in a completely stereotyped manner. Another continental aviculturist who kept and bred the white domestic form merely records the female as edging along the perch towards the male, thus implying that she did not join in the display (Kapzynski, 1961).

I never saw my female display in the same manner as the male in response to his doing so although I watched a number of successful copulations and many more attempts by the male (prefaced by display) that came to nothing owing to the unco-operativeness of his mate. If she was in the mood for copulation she would respond to his display by hopping or sidling towards him and immediately solicit with crouched posture and quivering tail. Often she did this the moment the male *began* to display, even before he had got fully into the bent over posture. If she was unwilling she would hop up to the male and put her head *over* his as soon as he began to get ready to mount her or even before, at other times she would hop away, stay where she was and peck at the male's bill as he neared her, or simply take no notice and then slip from under him when he tried to mount her.

Successful copulation was always followed immediately by aggressive behaviour. Usually this was initiated by the female. As he dismounted the male would adopt a rather upright posture (see sketch) similar to that used when singing alone. The female would at once peck fiercely at his bill and face. He would usually reply in kind and a brief but fierce pecking match would ensue. Usually they pecked only at each others bills and faces but in a very evidently " vicious " manner, quite unlike the " pulled punch " pecking duels in which pairs of waxbills sometimes indulge. Sometimes they pecked at each other' feet also, but not very often. As their aggression died down mandibulation would replace pecking and the birds would then give the greeting display. Often their anger would flare briefly again and they would recommence fighting even after giving a low-intensity version of the greeting display. On one occasion the male definitely started the post copulation hostilities, pecking fiercely at the female before she made a move to attack him. Similar post-copulatory aggression has been recorded for the Spice Bird (*Lonchura punctulata*) (Moynihan and Hall, 1954).



(4) Posture adopted by male immediately after coition. A very similar stance is usually (but not always) assumed by the male when singing alone.

Whilst nesting and laying the female sometimes hopped up to the male whirring her tail violently (the movement appearing to me nearer to that made when drying after a bath than when soliciting) and then put her head over his or else peck at his bill or feet. Sometimes this developed into an attack in which she chased the male about the cage or room, sometimes the male would peck back at her. I had the impression that this behaviour was caused by the female being sexually aroused but the male failing to satisfy her by displaying. At all events on the days when the female behaved in this manner she responded immediately by soliciting if the male began his courtship display. The female Canary often attacks her mate if he does not respond to her sexual advances (Nicolai, 1960). "Hell hath no fury..."

As in some other aspects of its voice and behaviour the Java Sparrow apparently, however, shows considerable individual or racial variation in its post-copulatory behaviour. Thus Radtke (1959) records that his male always sang immediately after copulation. He does not mention what the hen did but obviously the male could not have sung had she attacked him. Kapzynski (1961), speaking of the white form, says that the female pecks *gently* (italics mine) at the male's head after copulation and that he " crouches patiently ". Obviously both the above aviculturists must have owned Java Sparrows a good deal less aggressive than mine !

Nesting

For nesting purposes my birds chose the longest, toughest and most wiry of the many sorts of dead grasses I gave them. Long, thin, pliant twigs of weeping birch were also readily taken. Soft or short grasses

were practically ignored. Some dead, tough bindweed vines were taken very eagerly. A large, globular nest was built in the plastic basket already mentioned. The cup of the nest lay very deep within and was lined with feathers. Body feathers of domestic fowl and a few pigeons' feathers were supplied. Fairly large, fluffy, white or nearly white feathers were preferred.

So far as I saw only the male built the outer part of the nest. The female would accompany him as he did so but never attempted to carry anything to the nest. She may have done some arranging from the inside but there was no proof of this. Both sexes, however, took feathers to line the nest and continued to do so throughout the incubation period. They showed no interest in bits of burnt wood as some estrildines do. All material was carried by one end in the usual estrildine manner.

Parental Behaviour

Both sexes incubated and brooded. One bird was always present in the nest (though probably not incubating) from the time the first egg was laid. I did not record the periods for which each sat. They relieved each other about every 20 to 30 minutes or even more often, at least on those days or parts of days when I took note of them. When off duty the male frequently sang except on the day before his death.

Behaviour towards doves

I have previously described (Goodwin, 1952) how the Java Sparrows that I kept in my boyhood roosted under Turtle Doves (*Streptopelia turtur*) that were kept with them. When the Turtle Doves were nesting they would choose an incubating individual to roost under (probably because it was easier to creep beneath) but at other times they would roost alongside or (more often) between the legs of a dove roosting in the ordinary way. Morris (1956) recorded similar behaviour between Java Sparrows and Spotted Doves (*Streptopelia chinensis*). I have since discussed this matter with other aviculturists and those of them who had kept Java Sparrows with doves of the genus *Streptopelia* had all observed similar behaviour. One, whom I recently spoke to, was keeping Java Sparrows with Spotted Doves and he found that his birds tended to roost perched on the dove rather than against or underneath it as would appear to be more usual.

Morris interpreted this behaviour as being due to the fact that the dove's rounded form suggests the form of a fluffed out estrildine such as others tend to clump with but being " bigger and better " it supplies a super-normal stimulus. Kunkel (1959) criticised this interpretation on the grounds that such an unselective " clumping " reaction would be impossible in a wild state and suggested that the Java Sparrows concerned are merely trying to keep warm. He points out that

estrildines (or many of them) if very cold will clump together regardless of species. My own experience, admittedly limited, of Java Sparrows suggests that they do not clump very freely among themselves except with their own mates. Moreover, Morris' Java Sparrows defended " their " doves against rivals whereas had they been suffering from cold one might have expected them to welcome anyone who wanted to join the huddle. Estrildines will quite quickly learn to toast themselves by a light bulb, bar-heater or other source of artificial warmth but the fact that *all* Java Sparrows appear to react to all *Streptopelia* doves in the above-described manner seems to rule out acquired behaviour or, at any rate, behaviour acquired *subsequent* to capture.

I consider it not impossible that wild Java Sparrows may exploit some species of dove in this way. Observations on their behaviour in a wild state are much to be desired. Aviculturists could, however, provide information that would give much insight into this behaviour. For example ; anyone who keeps Java Sparrows might be able to answer one or more of these questions.

(1) Is this behaviour shown towards birds other than doves ? (It was not shown towards cockatiels, lovebirds and Rain Quails by some Java Sparrows I observed kept with those species.)

(2) If more than one species of dove are kept with the Java Sparrows which do they choose ? Are any species of doves not used (by Java Sparrows known to exploit other doves).

(3) Do the white or pied domesticated Java Sparrows react in the same way ?

(4) Does the reaction vary with temperature ?

(5) Is it also shown by breeding Java Sparrows ?

(6) Do Java Sparrows kept in hot countries (Africa, parts of Australia) show this reaction ?

If any reader can supply answers to any of the above questions or any other information on this or other aspects of Java Sparrow behaviour it is much to be hoped that they will publish their observations in our magazine.

Concluding Remarks

I think I have shown that although so common a bird in captivity with us the Java Sparrow is of great interest and poses not a few problems both in regard to its behaviour and, on a practical level, in the matter of correct feeding. By this I mean a diet that will achieve constant breeding success ; the adults are easy enough to keep in *apparent* health when not breeding. Most of the successful breedings of the wild form seem to have occurred in outdoor aviaries and often without their owners being aware of exactly which of the available foods the Javas were taking.

Although, as I have said, circumstantial evidence suggests that the

domesticated white and pied Java Sparrows are by no means so easy to breed as they are usually stated to be, it is, nevertheless, clear that they are very much easier than the wild form. They are also tamer or at least less timid, from what little I have seen of them. It is very likely that it would be possible by crossing domestic pied birds with wild ones (carefully selecting the least timid individuals of the latter form) to succeed in, eventually, producing wild-coloured Java Sparrows that were relatively tame and would breed freely in captivity. Any person with time, facilities and patience to embark on such a project would, if successful, achieve a far more worthy end than the innumerable fanciers who spend time and money to produce ever more monstrous macrocephaline Budgerigars or more distorted Canaries.

Note.—The line sketches are intended to give an idea of the postures described. They have no pretension to art or detailed accuracy.

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* * *

BREEDING THE ROCK PARRAKEET

(*Neophema petrophila*)

By Hartley King (St. James, Western Australia)

I had a surprise breeding of my Rock Parrakeets (*Neophema petrophila*) this year (1962). I have had two pairs of these birds for four years now and although they nested each year, nothing ever came of their efforts. The first two years I had them in the finch aviary with a mixed collection of Australian finches ; the third year I housed them on their own ; and this year they were in a large aviary 14 feet by 48 feet by 10 feet high, together with two pairs of Bourkes, one pair of Regents, one pair of Western Rosellas (Stanleys), two pairs of Cockatiels, a few doves and a pair of Indian Peafowl. The aviary is covered in at both ends to a depth of 6 feet and numerous nest-boxes were scattered about under cover. I had given up the idea of breeding Rocks until such times as I could provide a large slab of limestone in which was a suitable cavity. This I intended to place under a dripping tap to supply the moisture that I had become convinced was an essential. However, I did have hopes that the Regents might go to next even though they were but a year old, and to this end I placed a hollow log some 10 inches in diameter and 4 feet long, at an angle of 30 degrees in the open flight, and wrapped felt round the outside to afford some protection from our hot summer sun.

Whilst the Cockatiels, Rosellas, Bourkes, doves, etc., went to nest in various sites, not a single bird showed the slightest interest in my special log. It so happened that the log was situated directly behind a large lemon tree and it is my practice on hot days (which means almost every day through the breeding season) to send a spray of water high above the tree, which serves the dual purpose of watering the tree and the surrounding plants and also allows the birds in the aviaries round about to indulge in a shower if they so desire. Thus it came about that the log was under a spray of water for an average of 1½ hours during the hottest part of the day.

Early in January I concluded that the log was not going to be used and decided to take it down. I was just about to cut it down when I was prompted to take a glance inside. I lifted the lid and lo and behold there was a Rock hen with four little heads peeping through the feathers. Needless to say I slipped the lid back on and scrambled down smartly, after which I left things severely alone. Some ten days later there were four fine young Rock Parrakeets flying about the aviary. I will maintain the same conditions next year and keep a much closer watch on the female Rock.

There are very large numbers of Rocks in Western Australia, mostly on the off-shore islands or the rocky parts of the coastline south and east to South Australia from a point about 100 miles north of Perth.

By the way, St. James is in the Perth metropolitan area 7 miles from the centre of the city.

THE PARROTS OF AUSTRALIA

4. THE BLUE-BONNET

By Joseph M. Forshaw (Canberra, Australia)

(Continued from Vol. 68, No. 6, page 207)

4. The Blue-Bonnet

(*Psephotus haematogaster*)

The second new species of Australian parrot presented by John Gould to the Zoological Society in London on 26th September, 1837, was the Blue-bonnet. This bird was also placed in the genus *Platycercus* with the remark that it was the most beautiful member of the genus yet discovered. The red patch on the abdomen was the cause of its being called *Platycercus haematogaster*. The species was later included in *Psephotus* and *Ps. haematogaster* became established.

In 1912 Mathews created the genus *Northiella* for the Blue-bonnet. It was noted that the species differed from other members of *Psephotus* by having the first five wing primaries attenuated into spatulate tips. Although this difference hardly warrants a generic differentiation, it gains much importance when considered together with other distinctions such as presence of blue cheek patches, larger and heavier bill, larger general size with a more bulky appearance, and stronger call. There does seem to be some justification for the separation but this must be weighed against the convenience factor before any hasty ideas are formed. Most taxonomists have come to the conclusion that it is much more convenient to retain the Blue-bonnet as a member of *Psephotus* and the author is in complete agreement with this decision.

Although not amongst the most brilliant of parrots, the Blue-bonnet exhibits an extremely fascinating colour pattern and it impresses all who meet with it. The adult male has the upper parts ash-brown with the crown, face and cheek patches blue. The blue is much deeper, with a mauve tint, on the forehead. The breast is of a lighter ash-brown colour with the feathers having buff spots on them thus creating an overall speckled appearance. The abdomen is yellow with a red centre patch. The vent is yellow with a few faint red markings in some old birds. The median wing coverts are olive coloured. The shoulders are turquoise blue merging into a brilliant ultramarine blue on the primary coverts. The rump and upper tail coverts are ash-brown with the central tail feathers a somewhat darker shade of the same colour merging with a dark blue on the outer edges. The secondary tail feathers are lighter with more blue. The undersides of the tail feathers are white. The female and immatures are somewhat lighter in general colour. It is a medium-sized bird and a male taken by the author at Tero Creek in

far north-western New South Wales on 16th August, 1962, gave the following measurements and details :—

	inches.
Total Length . . .	12·7
Tail	6·6
Wingspan . . .	15·25

Bill white, iris dark brown and feet slate grey.



Distribution of *Psephotus haematogaster*

Psephotus haematogaster is a bird of the interior and inhabits semi-arid, arid, and desert areas. The distinct subspecies recognized correspond roughly in distribution to these zones. The interior of southern Queensland, New South Wales, Victoria and South Australia constitute the range of this species, while one isolated race inhabits an area in Western Australia. Five subspecies have been described from within this range, but the dismissal of one of these is here advocated.

Ps. haematogaster haematogaster is the race described in the plumage description above, and inhabits the arid interior of South Australia,



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The Blue-bonnet (*Psephotus haematogaster*)



Copyright] [*J. Forshaw*

Tero Creek Station, Far North-western New South Wales : Haunt of the Blue-bonnet (*Ps. haematogaster*).

[*To face p.* 72

Victoria, far western New South Wales and far south-western Queensland. It is by far the most common of the subspecies and enjoys the widest range.

Considerable confusion was created at the turn of the century when it was realized that Gould described the above race as the typical form in 1837, but pictured the red-vented race in his *Birds of Australia* published some twenty-five years later. Bonaparte, not realizing Gould's error, immediately applied the name *Ps. h. xanthorrhoa* to the yellow-vented form. This state of affairs existed until 1913 when Mathews discovered the fault. *Ps. h. xanthorrhoa* was immediately made a synonym for the typical yellow-vented race and the red-vented form was named *Ps. h. zanda*. A short while later it was discovered that, in spite of all the confusion, Gould had actually succeeded in tabulating the red-vented race in 1865 and he was thus granted the final honours.

Psephotus haematogaster haematorrhous was described by Gould in 1865. This subspecies differs from the typical race in having the centre red abdominal patch continue through the vent, and in having the inner median and greater wing-coverts blood red. This beautiful and distinctive race inhabits the semi-arid areas of southern Queensland and New South Wales. The southern limit of the range of this race is uncertain but records exist for Wellington, N.S.W., while the author has observed it on many occasions a few miles north of Dubbo, N.S.W. Intermediates between this and the typical form exist and one such bird that the author observed in captivity was reported to have come from twenty miles north of Leeton, N.S.W.

In 1912 G. Mathews described *Ps. haematogaster alter* from a specimen taken at Murtoa in the Mallee area of Victoria. This race was reported to differ from the typical form in its much larger size and in having the under-tail-coverts greenish yellow. This latter colour difference he altered to green in 1913. From all subsequent reports and personal observations the author cannot agree with this colour distinction as put forward by Mathews. Although there is a report of some immature females from the South Australian Mallee areas having yellowish-green under-tail-coverts, the universal colour for all adults from this area is pale lemon-yellow. As regards the larger size the above statement does not withstand investigation. Individual Blue-bonnets vary somewhat in size and a standard larger size from this area does not exist. A pair of birds belonging to this race was collected by a party, of which the author was a member, at East Wellington, South Australia, in March, 1962. The measurements obtained were as follows :—

	Total length, in.	*Wingspan, in.*
Adult male	12·2	14·5
Adult female	11·7	14·5

As one can see these birds were smaller than the typical *Ps. h. haematogaster* whose measurements are given above. The conclusion the author draws regarding this race is that, although a slight difference exists in so far as the birds of the Mallee areas of Victoria and South Australia are slightly paler in colour, the subspecies *Ps. h. alter* as described by Mathews is not acceptable.

In 1891 T. Salvadori tabulated *Ps. h. pallescens* from a specimen collected at Cooper's Creek, South Australia. This race is distinguished by the very pale upper surface and breast, while the olive patch on the median wing coverts is a more yellowish colour. This is a bird of the desert regions of the Lake Eyre Basin, one of the driest areas of Australia, and it illustrates clearly the effect of environmental factors on the development of a species. This race is similar in its distinctiveness to *Ps. haematonotus caeruleus* of the same area.

Psephotus haematogaster narethae was tabulated by H. L. White as a new species in 1921. It retained its specific rank for twenty years and was then reduced to sub-specific status. White presented this subspecies as a result of three skins collected by F. L. Whitlock at Naretha, Western Australia. Four hundred miles of barren, waterless desert isolates this distinct race from the eastern forms.

The Naretha Parrot or Little Blue-bonnet, as *Ps. h. narethae* is often called, differs markedly from the typical race. A full description of the male is the best means of illustrating the differences. The measurements of the type specimens are as follows :—

	Total Length, ins.	*Wing Length, ins.*	*Tail, ins.*
Adult male	11·25	4·8	6·8
Adult female	10·25	4·1	6·03

The general colour above, including the greater portion of the head, the fore-neck and chest, pale brown, becoming a greyish-olive on the back. The rump and upper tail-coverts are a rich olive yellow. The nape, hind-neck, throat and upper breast are mottled with a light buff. The forehead and upper ear-coverts are a greenish-blue, changing to a deep purplish-blue on the lower ear-coverts, which have an edging of very pale yellow. This two-tone extensive facial colouring is markedly different from that of the typical race. The abdomen is very deep yellow with no red patch, while the flanks are washed with greyish olive. The under tail-coverts are vermilion. Greenish-blue is the colour of the lesser wing-coverts and shoulders. The outer median wing-coverts are scarlet, while olive yellow is the colour of the inner median and greater wing-coverts. The inner secondaries are also olive yellow, while the outer secondaries, primary coverts and primaries are ultramarine blue. The central tail feathers are dull

olive-green washed with blue, while the secondary tail feathers are dull deep blue with white on the outer edges. Under the tail feathers is white washed with blue. The sexual difference is more obvious with this race than with *Ps. h. haematogaster*. The hen *Ps. h. narethae* is much duller with the colours on the wings, ear-coverts and abdomen greatly reduced. The smaller size of the female is also evident.

A bird of the semi-arid and arid areas, *Ps. haematogaster* is often observed flying over heath, saltbush or spinifex plains or through Mallee trees. The flight is undulating and not unlike that of the *Platycercus sp.* except that the wings are left extended and not withdrawn between wing beats. The birds generally fly quite close to the ground rising over the higher bushes and dropping down immediately to the lower level again. If the bush or Mallee gum is of comparatively large size, the birds will swing to the side and straighten on the other side. Frequently a small party of birds in flight will part on coming to a Mallee gum, some going to the right, others to the left, and rejoining once the tree has been bypassed. Both these methods of avoiding natural obstacles, when in flight, have a certain fascination about them, especially as the flashes of brilliant blue from the wings provide a beautiful relief in what is often a desolate setting. Whilst in flight the call is nearly always used.

The call note of this species is most distinctive and cannot be mistaken for any other parrot within its range. It somewhat resembles the alarm call of the Rosellas but is of a sharper tone. A rough indication of the sound is given by placing one's hands on a medium sized hand-bell and ringing it. A high pitched piping whistle is also employed. Although this species generally feeds in silence sometimes a chatter will be heard.

The food of the Blue-bonnet consists of seeds of grasses and other plants and shrubs. Most of the seeds are procured on the ground and, as the bird usually feeds under a tree or shrub or some such shaded area, it is most difficult to observe without warning and usually a person is not aware of its presence until he flushes it from the ground. When running on the ground *Ps. haematogaster* has a most curious upright stance and appears to stretch itself to its maximum height. In some areas within the range of this species, the seeds of Saltbush (*Atriplex vesicarum*) and Bluebush (*Kochia sedifolia*) are firm favourites. A close examination of the crop of a bird taken at Moree, N.S.W. in 1909 revealed mainly small grass seeds supplemented by fragments of stamens of flowers and pieces of charcoal.

Ps. haematogaster shows a marked preference for certain trees within its range and so strong is this ecological factor that one can foretell the occurrence of these birds merely by the vegetation. In some areas false sandalwood (*Myoporum platycarpum*) is the favoured habitat while in the more eastern areas Bull-oak or She-oak trees (*Casuarina sp.*) and

Native Pine (*Callistris sp.*) are the most popular. So noticeable is the second as a favoured habitat that another name for this bird is Bull-oak Parrot.

An interesting account of the relationship between *Ps. h. narethae* and the vegetation among which it lives was given by J. Calaby in 1956. Two species of Acacias (*A. sowdenii* and *A. aneura*) were the dominant trees in the locality while the single species of Casuarina (*C. cristata*) was really quite rare, generally occurring in scattered groves. It was found, however, that the Naretha Parrot did rely on these few Casuarinas because they were the only species in the area in which hollows formed.

Unlike most other broadtailed parrots this species is exceedingly quiet while roosting during the heat of the day. Frequently when the author has been seeking these birds he has almost given away the search when suddenly a party of Blue-bonnets will be literally stumbled on as they roost in the centre of bush, shrub or small tree. When these birds are aroused in such a manner they call excitedly and raise the feathers on their foreheads and crowns while the wings are raised in the folded position. The raising of the crown and forehead feathers is most interesting and, because of the plumage on these parts, it is most impressive with this species.

Although it does not associate in large flocks as does *Ps. haematonotus*, the Blue-bonnet is a comparatively common bird and most country dwellers from the interior know it. Shearing quarters and storage sheds generally have a couple of pairs of these birds in the near vicinity while the dams on outback properties are visited twice a day by many small parties.

Sexing Blue-bonnets in the field is a very difficult task, but when the birds are in the hand a combination of differences will usually solve the problem. The female is generally smaller in size, more slender in build and duller in colour than her mate. The " wing-stripe " is a valuable indication of sex with this species. Immatures show the stripe but it tends to be less marked with the males. With the adult bird the position is much clearer with most females retaining the stripe and almost all males losing it. It is true that exceptions to these main distinctions occur but when all the differences are taken and applied together the risk of failing to distinguish the sexes is almost eliminated.

The activity of these birds increases as August inaugurates the breeding season. The males can be observed displaying before their mates on the branches of trees and bushes. The display is performed by the male while in a very upright position. The wings are raised and vibrated in the folded position, the head is held upright and bobbed forward, while the tail is spread and moved quickly from side to side. The interesting addition to the display of this species is that the feathers of the forehead and crown are raised. Because of the plumage of the

head and facial parts of the Blue-bonnet this raising of the feathers becomes the most striking feature of the display.

Both sexes take part in the selection of the nesting site, which is a hollow limb or hole in the trunk of a tree. Except for the timber bordering watercourses and dams, most trees in the areas frequented by this parrot are relatively small. This results in most nesting hollows being small cavities close to the ground. However, in many cases this disadvantage is counterbalanced by the great depth of the nesting hollow resulting in the nesting chamber being a considerable distance from the entrance.

The bottom of the nesting hollow is lined with decayed wood and eggs are deposited in a shallow excavation. Four to seven, usually five, eggs form the clutch. The eggs are pure white, round in shape with a smooth glossy surface. The average measurements of the eggs are 0·94 by 0·83 inches. The eggs of *Ps. haematogaster narethae* are slightly smaller than those of the other races. The average measurements of these eggs are 0·89 by 0·72 inches. They also differ in being dull without gloss and in having a rough surface. The eggs are laid at forty-eight hour intervals and incubation commences with the laying of the second egg. The hen only incubates and is fed by her mate during the three weeks sitting. The female sits very tightly and the author has found, during the examination of many nests, that she will not leave until the very last minute.

Newly-hatched nestlings are naked and helpless and are closely brooded by the female. Down quickly appears followed by the gradual appearance of feathers. The cock bird, although not permitted to feed the young until they are progressing favourably, is a most attentive parent feeding the female who in turn feeds the regurgitated food to her offspring.

Approximately four weeks after hatching the young leave the nest and are fed by their parents until they become fully independent. The young often remain with their parents for quite some time thus accounting for the usual small parties observed.

Rarely is *Ps. haematogaster* double brooded but the breeding season, which usually lasts from August to December, is often altered by the rains and in this way some pairs will produce young twice in a year. This correlation between climate and breeding times applies to a great number of the birds inhabiting the interior parts of the continent.

Besides governing the breeding seasons, the climatic conditions also have a marked effect on the general ecology of this species. In times of drought the birds will often associate in flocks and move from the drier areas towards the rivers and billabongs. This movement usually brings them into contact with *Ps. haematonotus* and the two species will occasionally join forces. Damage to grain crops frequently follows the

formation of these flocks especially if food is not plentiful as is often the case in times of drought.

Because of its extremely spiteful disposition the Blue-bonnet is not a popular aviary bird. It is very pugnacious and is quite capable of killing other species much larger than itself. However, if housed separately, this species is a most fascinating inmate with its constant movements, most of which are executed in the characteristic jerky manner, and playful actions. If swings and other objects are placed in the aviary the birds will spend many hours with the plaything.

Successful breeding of this species in captivity is not an easy task. Although it has been bred overseas on numerous occasions there are few records for this country. It is not easy to obtain a suitable pair of birds as some individuals are not kindly disposed towards others. Once a pair have mated, however, they remain strongly attached to each other.

Once the breeding pairs have been isolated two hollow logs or nesting boxes should be provided. The cock bird will become increasingly dominant over his mate and will chase her into the nesting hollows. Once the hen has commenced incubation the pair should not be disturbed as she will usually leave the eggs at the slightest interference. This is in direct contrast to breeding in the wild state where the hen sits very tightly.

Very few hybrids with this species have been recorded but the typical race has often been crossed with the red-vented form. Intermediates between these races do occur in the wild state.

The diet recommended for aviary birds is a mixture of plain canary seed, sunflower, millet and a little hemp when this is available. A small quantity of oats may be given but too much of this seems to be detrimental to the health of these birds. Sprays of seeding grasses and gum tips are always appreciated. A plentiful supply of green food is essential, while pieces of apple are often relished.

Although not amongst the brightest of the parrots, *Ps. haematogaster* has numerous compensations that make it a most fascinating species. A bright flash of colour as it flies over the semi-arid plains of the interior, the Blue-bonnet brings life and brightness to a somewhat desolate environment. It is still another gem in the wonderful avian jewellery store—Australia.

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(*To be continued*)

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BREEDING THE KURRICHANE THRUSH

By Charles Everitt (Trenton, N.J., U.S.A.)

The Kurrichane Thrush—*Turdus libonyanus*—is resident over an extensive area in Africa, ranging westward from Natal and the Transvaal northward to the Sudan and westwards to Senegal. There are several recognized races through this region the variations being mainly in colouring and size, those of the east being generally richer in colour and larger than the western races. The nominate race—*Turdus l. libonyanus*—comes from Kurrichane, West Transvaal, but it is with the eastern race—*Turdus l. tropicalis*—that we are concerned with here.

Mr. Edward Marshall Boehm received four of these birds from Mozambique in December, 1960, and they were housed in reception quarters until late February, 1961, and then released into a planted aviary of some 40 feet by 16 feet. They are slightly smaller than the nominate race, being about 8 inches in total length and the sexes are alike. The top of the head, through the back, wings, and tail is brownish-grey, the throat and belly being white. The chest is buffish-grey with black streaks on the side of the throat and neck. The flanks and under-wing feathers are a deep yellowish buff, the legs and feet being flesh to pale yellow in colour. The bill is bright orange and the eye is brown with a fine yellow line encircling it. There is a narrow pale-buff superciliary eye-stripe running from the base of the upper mandible, over the eye, to the back of the head.

As is customary with all the birds in the Boehm collection, they had been banded with different colours prior to being transferred to the aviary in which they lived amicably with a diverse assortment of other birds. This included pairs of Ross's Touracos, Black-headed Orioles, Silver-blue Tanagers, Black-headed Sugarbirds, Black-throated Cotingas, and Red and White Crakes and some half-a-dozen or so single birds of other species. Incidentally, the pair of Black-headed Sugarbirds had been bred on the establishment in 1961, each bird from different stock, and they themselves reared young, in the aviary now being dealt with, in 1962 thus giving Mr. Boehm a third generation of this species.

However, to return to the Kurrichanes, a further specimen received from the same source in September, 1961, was allotted its coloured leg-band and sent in to join the others of its like. Careful watch was maintained for the first few days to ensure that it was accepted for, so often, when a new member of a species is introduced amongst settled birds, conflict is experienced. In this instance all went well and the five birds got along together although it was noticed that, unlike the majority of thrushes of other species spread throughout the numerous Boehm aviaries, these birds never became very tame,

spending the major part of their days hiding in the hemlock trees and ilex bushes. This skulking habit of theirs gave value to the system of colour banding for, without this means of identification, it would have been virtually impossible to maintain a check on them, for seldom were all five to be seen at one and the same time.

In view of their apparent liking for the trees, nest-baskets were secured in various positions in the hope that they would be made use of. If this hope had been pinned solely on the thrushes it would have been doomed to disappointment, for they completely ignored them. One of the nests, however, was made use of by the Red and White Crakes, but that is a separate story that has been recounted in the November–December, 1962, issue of the AVICULTURAL MAGAZINE.

It was in March, 1962, that the latest arrival of the Kurrichanes was seen to be carrying nesting material up to a 2-inch ledge above the entrance door to the aviary. This obviously was totally inadequate, so an open-fronted box of 8 inches by 6 inches, with a 2-inch front and 6-inch sides, was fixed at the chosen site. The top was made with a 2-inch overhang so as to give full protection from the moisture drippings from the Visqueen covered roof and to act as a deterrent to other birds. The box was accepted immediately, the final nest being of typical thrush construction with its mud and coarse grass base and surround, the whole being lined with fine grasses, pieces of wool, and feathers. A clutch of three eggs was produced over 11th–13th April, but these proved to be clear and were deserted. They were pale bluish-green in ground colour, finely speckled and spotted all over with pinky-brown, and measured 26 mm by 18·5 mm. A further clutch was laid in May and this time two did hatch but the chicks lived for two days only. A final effort in June was made, but the eggs were deserted after about ten days of sitting.

In the meantime, however, another pair had selected a site about half-way along the side of the aviary, again on a 2-inch ledge. Another nest-box was placed there and, as with the former pair, the birds took to it right away and produced a clutch of three clear eggs in May. On 3rd June, another egg was laid followed by two more on the next succeeding days. Incubation, which was shared, began with the laying of the first egg and lasted fourteen days, the first chick hatching on the 17th and the last on the 19th. The nestlings were covered with gingery coloured down and had bright orange gapes. Their eyes were open at six days by which time quill feathers were showing in their wings. This trio never looked back, the parents being most assiduous in their care of them and the first one vacated the nest on 1st July, being followed by its nest mates on the 3rd and 5th respectively.

Their upper plumage was greyish-brown, like the adults', but the breast was buff, heavily spotted in dark brown, the abdomen was white and the bill dark coloured. There was very little sign of the rich

buff-yellow in the flanks, these being flecked with brown. At fourteen days after leaving the nest they were feeding themselves and their bills were now yellow. It was not until they were some thirteen weeks old that the spottings and fleckings had disappeared from the breast and flanks and they now resembled their parents in colouring, but were slightly smaller. Needless to say they had been banded as soon as they left the nest and this artificial means of identification is now the only means by which they can be told apart from the adult birds.

Their food throughout the rearing period had consisted of our own brand of soft-food mixture, ground raw beef heart and a surfeit of live-food in the form of mealworms, earthworms, and gentles. Since the advent of the young birds the others have become much tamer and it is a common sight to see the entire eight of them foraging about in the Ground Ivy and around the roots of the various trees and shrubs. They are all living together in perfect accord and no action is intended to split them up. We do at least know now the sexes of four of them and hope that, in time, we will be able to accurately record the sex of the remaining adult and the young birds.

Although the Kurrichane Thrush is a fairly common bird within its native habitat, I have not been able to find any record of their breeding in captivity prior to that described above. If such does prove to be the case it would seem that yet another " first " has been accomplished by Mr. Boehm.

* * *

THE NATIONAL EXHIBITION OF CAGE-BIRDS, 1962

This was a most remarkable exhibition. Increased entry fees might have caused a serious drop in numbers, but in fact the drop was quite small and only really high quality exhibits were on show. Appalling weather might have meant a fiasco, but there were amazingly few absentees and the birds seemed quite undaunted by the fog and cold. In the Foreign Section the exhibits were all in fine condition and there were some first-class specimens on view. In spite of having had a most worrying time with electricity failures in her aviaries, Mrs. Scamell staged a splendid team in immaculate condition, ranging from the Fire-Finches which won the first class and the special for the first three classes to her magnificent Toco Toucan which looked as perfect as ever.

There were few rarities in the seed-eater classes but the standard was consistently high—class specials to Mrs. White's White Java Sparrows, K. Lawrence's Queen Whydahs and C. W. Stevens' Melba Finches were all well deserved. Best Large Seed-eater special went to Mrs. Draper's fine Yellow-bellied Grosbeak and that for Best Small

Seed-eaters to W. Langberg's really lovely Grenadier Waxbills. The class for Gouldian and Parrot finches was outstanding, containing several pairs of Parrot Finches, Red-headed, Blue-faced and Peale's, all in sparkling condition ; good Red-headed and Yellow-headed Gouldians and some nice Pintailed Nonpareils. The small A.O.S. class was good ; besides W. Langberg's winning Grenadier Waxbills this consisted of several pairs of Rhodospingus ; Schlegel's and Peter's Twinspots, Red-crested Finches, a Hooded Siskin, Pytilias and Blue-capped Cordon Bleus.

The insectivorous classes showed few absentees and contained many lovely specimens. It was a pity that Mrs. Dineen's Rifle Bird was alone in its class as this was a most interesting exhibit. Mrs. Dineen first showed it five years ago when immature and this is the first time it has come into colour although not yet quite in full plumage. I hope that by next year it will have rewarded its owner's patience and care by achieving perfection. There were three charming hummingbirds staged, first the delightful Gould's Heavenly Sylph which won the Supreme Award and several other trophies for J. Forest—this was in splendid condition but the lighting where it was staged did not do full justice to its sheen and colouring. Next came Mrs. Scamell's Violet-eared in perfect order, and a lovely little Heine's belonging to R. E. Oxley. A glorious sunbird class was led by Mrs. Scamell's Splendid, a very handsome bird, followed by Mrs. Draper's immaculate Golden-winged, Mrs. Scamell's well-known pair of Yellow-backed (one of the most charming of all sunbirds to my mind), two Wedgetails, Amethysts and a Bronze. The sugarbirds were really good, first was E. T. Hawes' Red-thighed, then Clare and Howard's pair of Purples, G. Anderdon's Red-thighed, several Isthmian, Purple and Yellow-bellied. The small tanager class had unfortunately several absentees, those present were Mrs. Kent's Black-throated which won the class, R. F. Dudman's Mrs. Wilson's, E. M. Beale's Blue-naped Euphonia and Mrs. Scamell's Flame-headed ; this last attracted me very much although it has a slightly soft-feathered appearance which I am told is natural to it. Several of the large tanager and bulbul class were also missing, but Mrs. Scamell's Coral-billed Bulbuls would have been hard to beat in a much larger class. These were followed by G. Anderdon's Blue Mountain Tanager in perfect condition, a Black Bulbul, Palm and Silver-blue Tanagers, and A. V. Griffiths' Yellow-crowned Bulbul which should be a most attractive bird when in full condition.

The flycatcher class was fascinating ; first were Mrs. Scamell's beautiful pair of Paradise Flycatchers, in faultless plumage and shown together for the first time ; Mrs. Scamell showed the hen two years ago and the cock won best foreign at Olympia last year. A lovely Blue-fronted Redstart and a Daurian Redstart won second and third places for Mrs. Scamell, followed by an Indian Blue Chat, a pair of

Blue-naped Flycatchers and a Loo Choo Robin. The only two entries in the thrush class were Blue-headed Rock Thrushes, the winners being Mrs. Scamell's breeding pair and the second a fine cock belonging to Mrs. Draper. A good starling class went to B. C. Davies' quite lovely pair of Amethysts, which won the Best Large Insectivorous special ; there were also some good Spreos, a Red-shouldered Glossy, Purple-headeds and Pagodas. A fine pair of Rothschild's Grackles won the mynah class for Mrs. Scamell from two good Hill Mynahs and a Common Mynah. The Toucans and Touracos were magnificent, not a very large class but full of quality. Here Clare and Howard's Curl-crested Toucans were placed first, quite fascinating birds but in rather rough feather. This is the first time I have seen them, and their tight black curls give them a most quaint appearance. Mrs. Scamell's superb Toco Toucan came second, J. W. Ransom's handsome Buffon's Touracos third and his Red-billed Toucan sixth, with Mrs. Draper winning fourth and fifth with a Pink-crested Touraco and a Toco Toucan. I thought this Touraco quite charming and it must be a lovely sight in an aviary. Doves and quail were rather disappointing with several absentees ; G. Anderdon's Mourning Dove won over pairs of Diamond, Barbary and Snow-white Doves and Chinese Painted Quail.

The small A.O.S. insectivorous class as usual held some delightful exhibits. Mrs. Scamell won with a fascinating newcomer described as a Yellow Warbler. Full of life and colour, this bird has the characteristics of a warbler but in spite of strenuous research has so far not been identified. Next came Mrs. Scamell's lively little Red-headed Tits and her beautiful pair of Small Minivets, some Yuhinas and a Blue-winged Siva. Medium-sized A.O.S. class went to Mrs. Scamell's Himalayan Ruby-throats, an interesting exhibit as the pair consisted of father and daughter, the latter bred this year. Next came Digby Stuart College's good Blue-cheeked Barbet, a Hangnest, a pair of Malayan Starlings and two more Blue-cheeked Barbets. The large A.O.S. class contained Clare and Howard's Orange Cock-of-the-Rock, an Occipital Blue Pie, Tree Pies and a Red-billed Magpie.

It was a pity that in the parrotlike classes some interesting exhibits were missing, but according to the judge, W. R. Partridge, the quality was extremely good. In the Peach-faced, Fischer's and Masked Lovebird class, Mrs. Duggan's excellent pair of Masked came first and went on to win Best Lovebirds. In the A.O.S. lovebirds and parrotlet class a fine cock Abyssinian won for D. R. House ; there were no parrotlets entered. K. Lawrence's Mitchell's Lorikeets won their class from Mrs. Duggan's Swainson's. The cockatoo and macaw class was won by G. Anderdon's Roseate Cockatoos, followed by his Citron-crest and A. W. Bolton's Noble Macaws ; the Roseates went on to win the Duke of Bedford Memorial Trophy for Best Parrotlike. The next class consisted of A. W. Bolton's Rock Peplars and L. G. Stevenson's

Crimson-winged, both pairs in shining condition but the Rock Peplars slightly the more perfect. There was only one exhibit staged in the grass parrakeet class, H. Willis' Bourke's, and only three in the broad-tail class, H. Willis's Pennant's and Redrumps first and third, G. Anderdon's cock Pennant's second. A. W. Bolton's fine pair of Cockatiels won their class, and E. A. Dracup's Canary-winged Conures won that for Ringnecks and Conures from A. W. Bolton's Golden-flanked, a pair of Sierra Parrakeets, a Patagonian Conure and some Ringnecks. The parrot class went to Mrs. Draper's fine pair of Ruppell's (I cannot remember seeing these birds ever beaten), with her Little Dusky Parrot second and J. P. George's Green Amazon third. There were also several Black-headed Caiques, a White-bellied Caique, a Primrose-cheeked Amazon, an African Grey and several Senegals.

The class for hybrids and abnormal coloured birds was interesting. This was won, for the sixth year in succession I believe, by Mrs. Lewis' Swainson's × Red-collared Lorikeet. Second was an attractive Alario × Canary shown by J. F. Busby, third R. G. Mountney's Avadavat × Firefinch and there were also a Hodgson's Rosefinch × Red Factor Canary, a Malabar × Mandarin Starling, a Splendid × Turquoisine parrakeet, Peachfaced × Masked Lovebirds, Red Avadavat × Goldbreast and an F1 hybrid.

I cannot end without a word of appreciation to the L.C.C. Parks Department and Raymond Sawyer for the high-light of the Exhibition. Last year I called their display an inspiration ; this year it was doubly so. Both sides of the gallery aisle were laid out in charming water gardens and shrubberies, one pool complete with the now famous Flamingos and the other with a pair of Crowned Cranes ; these were flanked by aviaries full of colour and a most effective tree in which two gorgeous macaws played happily at liberty. There was also a cageful of monkeys to delight the crowd, and two large pens—one full of rabbits and guinea-pigs with the most ridiculous hairstyles and the other holding the Parks' two Shetland foals, Minicab and Miniminor by name. I cannot help wondering if Raymond himself is going to break these to saddle !

Another last word—we are apt to take for granted the magnificent organization behind the Exhibition, but this year I must offer my humble appreciation and thanks to the officials and staff for the cheerful way they carried on in spite of frightful journeys and very little sleep.

And lastly, what a disappointment it was not to see Allen Silver. I believe this to be the first National Show he has missed and we certainly missed him ! I am surprised that such a young and vigorous man could be kept away and we all look forward to seeing him next year.

S. M. Anderdon.

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BIRDS IN THE JERSEY ZOOLOGICAL PARK

By Kenneth Smith

Gerald Durrell's Zoo Park in Jersey has a very interesting collection of birds, and during the four years of its existence quite a number of unusual species have been exhibited there. Numerous specimens have come as gifts, others have been purchased from collectors and dealers, but many of the best exhibits are the results of Durrell's own zoological collecting expeditions to the tropics. Indeed, one of the main purposes of establishing his own zoo was his resolve to fulfil his ambition to keep for himself, rather than send to other zoos, the wealth of animal life he collected over the years.

When I left Paignton Zoo towards the end of 1948 to build the Jersey Zoo, Durrell and his wife were leaving Britain for a collecting trip in Argentina, but already on deposit at Paignton were many of the animals that they had collected during their last trip to the Cameroons. These formed the nucleus of the Jersey Zoo and were shipped aboard the S.S. *Sambur* at Weymouth on the last day of November. The " zoo ship " arrived in St. Helier harbour the next morning, causing much excitement to the islanders—particularly to the children and young people, many of whom had never visited a zoo !

Among the Cameroon birds were Sunbirds, Mousebirds, a very tame Pied Crow, a Woodford's Owl, a trio of White-faced Scops Owls, an African Hobby (*Falco cuvieri*), an African Hawk-Eagle (*Hieraaetus fasciatus*) and a pair of Verreaux's Touracos (*Turacus verreauxi*). The birds were in good condition and steady, as they had been at Paignton Zoo for nearly two years, but at Jersey I had to put them into temporary accommodation while the construction of a bird room and aviaries proceeded. In passing I must mention that the birds had some remarkable amphibians as travelling companions to Jersey. These were Hairy Frogs (*Trichobatrachus robustus*) that Durrell had captured in the fast flowing streams in the Bafut highlands.

In June, 1959, three months after the zoo was opened to the public, Durrell returned from South America. His collection was rich in birds. There were Coscoroba Swans, Black-necked Swans, Crested Screamers, a Chimango Hawk (*Milvago chimango*), and two Seriemas—one Crested (*Cariama cristata*), the other an example of the rarer Burmeister's species, (*Chunga burmeisteri.*) Choice items were a pair of Yellow-naped Macaws (*Ara auricollis*) and some Sierra Parrakeets (*Amoropsittaca aymara*), also a wonderful pair of Great Grebes (*Aechmophorus major*) which, unfortunately, did not live long in Jersey. Also noteworthy was a tame Tucuman Amazon Parrott (*Amazona tucumana*) named Blanco. In his book " The Whispering Land " Durrell describes this handsome species as being " unusual in European collections ".

Other Argentine birds included an Ovenbird, two Red-breasted Marsh-birds, a Pigmy Owl and a Burrowing Owl, some Pileated Jays, two Red-gartered Coots and four White-breasted Rails, and a pair of Grey-necked or Hoary necked Guans (*Ortalis canicollis*). The Guans were ridiculously tame, and they still welcome human company by flying to the front of the aviary to greet zoo visitors with a high-pitched and somewhat raucous cackling.

Jersey Zoo has a good range of aviaries for birds of prey. Eagles shown are Wedge-tailed, Wahlberg's, Tawny, Bateleur, a Cassin's Hawk-Eagle and an immature Martial Eagle. The Martial Eagle was brought from Africa by Jeremy Mallinson, a member of the zoo staff, who spent four months in Bechuanaland during 1962. He also collected, mainly in N'gamiland, two young Ostriches, three Marabou Storks, a pair of Spur-winged Geese, a group of Red-billed Francolins, a Yellow-billed Kite and three species of Vulture, namely White-headed, White-backed, and a single specimen of the very large Lappet-faced or Black Vulture (*Torgos tracheliotus*). Owls are represented by the Malayan Fish-Owl, Virginian Eagle-Owl, Fraser's Eagle-Owl, Barn Owl, Tawny Owl, Little Owl, and a young Spectacled Owl which recently arrived from British Guiana, in addition to the owls mentioned as being part of Gerald Durrell's collections.

Although the zoo is only about five acres in extent it has a number of sizeable grass paddocks and a lake of a considerable area. The Ostriches occupy a large open enclosure, with a big indoor area adjacent for dull and cold weather. Sarus, Crowned and Demoiselle Cranes, Red-breasted Geese, Barnacle Geese and Upland Geese are displayed in naturalistic surroundings, while Blue Eared Pheasants and a Grey-winged Trumpeter enjoy complete liberty in the zoo grounds.

The tropical bird house and numerous large aviaries are populated by a wide variety of species, too many to list in full. Among the more interesting are Boatbill Herons, a Hammerkop, a fine pair of Crested Wood Partridges, two Toucan Barbets, a Rice Grackle, a Chough and a Raven, and a breeding colony of Fischer's Lovebirds. Valuable new additions, resulting from Gerald Durrell's recent journeys through New Zealand, Australia and Malaya, are a pair of Keas (obtained through the good offices of the Auckland Zoo) and five Blue-crowned Hanging Parrots.

About 250 different species of wild birds have been recorded in the Channel Islands, and quite a number of orphaned and injured birds have been brought to the zoo for attention. These have included several Barn Owls (the commonest owl in the Islands), a single Tawny Owl (extremely rare here !), four Water Rails, a Snipe, two Corncrakes, a Golden Plover, a Grey Phalarope, four Kingfishers, several Kestrels and two Sparrow Hawks. The Sparrow Hawks were released in the open country around the zoo.

NEWS FROM CHESTER ZOO

By A. W. E. Fletcher

As these notes are written, on 14th February, arctic weather is still with us and conditions are far from pleasant. Luckily there has not been a great deal of wind, which is so much more deadly than intense still cold. Compared with other parts of the country, snow has not been a major problem, though a certain amount of propping of flights, as a precautionary measure, has been done.

Arrivals during the past two months have been few. We were pleased to receive a pair of Lesser Snow Geese, presented by Mr. Frank Mosford ; the male being the blue form and the goose the white. Another gift we were glad to get was a Lesser Sulphur-crested Cockatoo, as we had no specimen of this attractive little Psittacine in the collection. Two common Buzzards, found half-starved in North Wales, have made a welcome addition to our large Bird of Prey flight.

Inappropriate though it may be to mention births in the present weather conditions, it is interesting to record that on 4th January, another Scaly-breasted Lorrikeet left the nest-box in the open flight. When the nest-boxes were being taken down in late September, it was found that this particular one had two eggs in it, which from their appearance were close to hatching. They were the third clutch of the pair concerned, and without much hope it was decided to leave the nest-box where it was. Both hatched, and as recorded above, one survivor appeared early in the year. It was immediately placed in the indoor shelter with its parents and is doing well.

The three new enclosures mentioned in an earlier article are now completed, and a few birds are already installed, including a pair of Black Swans, a pair of Sarus Cranes, and a group of seven Grey-necked Crowned Cranes and three Black-necked Crowned Cranes, together with a number of cock Pheasants. The Cranes are for the moment confined to barracks in the very comfortable shelters provided and should make a very fine show when, weather permitting, they are given the freedom of these very large enclosures.

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LONDON ZOO NOTES

By J. J. Yealland

A Crowned Hawk Eagle (*Stephanoaetus coronatus*) which was received in 1933 has died. Its age at the time of arrival is not known, nor is the age of a recently deceased Donaldson Smith's Turaco which came in 1945 and was in Mr. Spedan Lewis's collection at Leckford before that.

Three species new to the collection have been received. They are a Bourcier's Barbet (*Eubucco bourcieri*), a Tinkling Grass Warbler (*Cisticola tinniens*), both presented by Capt. R. S. de Q. Quincey and a White-chinned Thrush (*Turdus aurantius*) given by G. H. and J. R. Newmark.

The specimen of Bourcier's Barbet, a male, was of the normal green on back and wings, with a red head and pale yellow and white under parts at the time of its importation. Now its plumage is much faded, possibly due to a carotenoid pigment deficiency in its diet. There may be some Old World Barbets whose colours change for this reason, but I cannot think of any. *Eubucco bourcieri* ranges from Costa Rica to Peru, seven races being recognized.

The genus *Cisticola* has not previously been represented in the collection. There are some forty species in this genus (as many as seventy-five according to some recently published estimates) only two of them being found outside Africa, Madagascar and neighbouring islands. One of these, the Fan-tailed Warbler, ranges from southern Europe, throughout Africa to eastern Asia and northern Australia. Males of many species have conspicuous courtship displays, one species being known as the Cloud-scraper or Wing-snapping Cisticola, for the male flies to a considerable height and makes a snapping noise in the course of his evolutions. The nests, sometimes open, sometimes domed, according to the species, are built in grass or other low-growing vegetation and in some cases, if not all, the lining of plant down is added to, even during the incubation and sometimes after the eggs have hatched.

Some species are brood parasitized by whydahs and the Parasitic Weaver (*Anomalospiza*). The habitat is grassland, scrub, bush or savannah woodland as well as swamp and rocky country and the birds are insectivorous. In some there is an eclipse and a breeding season plumage.

The White-chinned Thrush, a native of Jamaica, is said to be frequently seen by roadsides and in gardens, particularly at higher altitudes.

Other arrivals of particular interest are three Red-wattled Lapwings (*Lobivanellus indicus*), four Green-winged Doves, six White-eared Fruit Doves, a Brown Hawk Owl (*Ninox scutulata*) and a Blue-fronted Redstart. A Woodcock picked up during the severe weather at East Preston in Sussex was sent and is so far thriving.

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COUNCIL MEETING

A Council Meeting was held on 11th March, 1963, at the Windsor Hotel, Lancaster Gate, London, W. 2.

Sir Crawford McCullagh, Bt., was elected a Vice-President, and Mr. L. W. Hill was elected to fill the vacancy caused on the Council.

The Society's Medal

The Society's Medal has been awarded to :—

Mrs. K. M. Scamell, for breeding the Rubythroat, *Calliope calliope*, in 1962.

Mrs. K. M. Scamell, for breeding the Himalayan Rubythroat, *Calliope pectoralis*, in 1962.

Mrs. K. M. Scamell, for breeding the Pied Bush Chat, *Saxicola caprata*, in 1962.

W. D. Cummings, for breeding the Blue-shouldered Mountain Tanager, *Compsocoma somptuosa*, in 1962.

C. M. Payne, for breeding the Knysna Touraco, *Turacus corythaix*, in 1962.

J. S. Rigge, for breeding the Crimson Macaw, *Ara chloroptera*, in 1962.

C. Smith, for breeding Mitchell's Lorikeet, *Trichoglossus haematod mitchellii*, in 1962.

Arthur A. Prestwich,
Hon. Secretary.

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BRITISH AVICULTURISTS' CLUB

The eightieth meeting of the Club was held at the Windsor Hotel, Lancaster Gate, London, W. 2, on Monday, 11th March, 1963, following a dinner at 7 p.m.

Chairman : Mr. K. Norris.

Members of the Club : Miss P. Barclay-Smith, R. D. Chancellor, W. D. Cummings, C. W. Desmond, B. Dittrich, Miss R. M. Ezra, Mrs. R. Goodman, Dr. R. Gottlieb, H. J. Harman, L. W. Hill, Dr. E. Hindle, F. E. B. Johnson, F. T. Jones, Miss E. M. Knobel, J. Kuttner, F. Mosford, G. S. Mottershead, Sir Crawford McCullagh, Bt., W. R. Partridge, C. M. Payne, A. A. Prestwich, D. M. Reid-Henry,

D. H. S. Risdon, R. C. J. Sawyer, H. A. Snazle, E. O. Squire, N. R. Steel, A. J. Swain, J. O. Wahlgren, P. L. Wayre, J. J. Yealland.

Members of the Club, thirty-two ; guests, eight ; total, forty.

There was a conversazione.

ARTHUR A. PRESTWICH,
Hon. Secretary.

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NEWS AND VIEWS

Poole Town Council, Dorset, has agreed in principle to assist Kenneth Smith to set up a zoo in Poole Park.

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An event unique in the annals of aviculture was the breeding last year of the Red-headed Parrot-Finch to the thirtieth generation by N. Nicholson.

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In 1959 Denby Collins was awarded the Society's Medal, for the first breeding of the Rameron Pigeon. Last year he was successful in breeding two more young ones.

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C. af Enehjelm reports that at the Copenhagen Zoo last year the following owls were bred : five Snowy, one Virginian Eagle-Owl (*Bubo virginianus*), and three *Bubo b. turcomanus* (?). His own sole success was one Spotted Eagle-Owl reared.

* * *

R. T. Kyme was quite satisfied with his parrakeet breeding results, 1962 : one Pennant's, eight Mealy and five Golden-mantled Rosellas, eight Stanleys and six Cockatiels. Unfortunately he lost the male of his pair of Green Conures that had three eggs the previous year.

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Professor Carl Naether is particularly anxious to import some Mountain Witch Doves *Geotrygon versicolor*. The present stock in California has been infertile for a number of years. If any reader in Jamaica is able to assist Professor Naether he would be very grateful.

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Thirty-two species and varieties of birds were successfully bred in the Adelaide Zoological Gardens during the 1961–62 season. Possibly the most important event from the display point of view was the rearing of four Mute Swans : two were reared in 1959–60, and one in 1960–61. The Mute Swan is a rare bird in captivity in Australia, although it does occur in small numbers in a more or less wild state in Western Australia and Tasmania where it has been introduced.

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The Chester Zoological Gardens were still but recently founded when, in April, 1940, there occurred a remarkable event. This was the nesting of the pair of Griffon Vultures. Vice-President G. S. Mottershead described the rearing of the young one in the MAGAZINE, 1941. It is very pleasing to be able to record that this bird, which has the distinction of being the only one of its kind to be bred in Great Britain, and nearing twenty-three years of age, is flourishing and is in splendid condition.

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Noel Burnett, of South Grafton, N.S.W., had been breeding Swainson's × Scaly-breasted Lorikeet hybrids for many years. According to Roy P. Cooper, *Emu*, 1962, p. 212, the original male is now fourteen and a half years old, and the female died at the age of nine years and eight months ; at the time of her death she was brooding three eggs. Of the young retained by Burnett, one is seven and several are six years old. In their first nest a hybrid pair hatched a young one that lived for twenty-seven days, but the eggs in all subsequent nests have proved infertile.

A. A. P.

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REVIEWS

THE BIRDS OF SIKKIM. By Salim Ali. Oxford University Press, 1963. Price 52*s.* 6*d.* net.

As might be expected from India's leading ornithologist, Salim Ali, this is a first-class book on the birds of Sikkim—to quote the author's own description—a vertical strip of extremely rugged montane country 40 to 60 miles broad and about 100 miles deep, wedged in between the Himalayan States of Nepal in the west and Bhutan on the east. In the introduction the author gives a graphic and concise description of the area. He states that the abrupt telescoping of the terrain—from the hot steamy foot-hill valleys to the arctic cold of the snow-capped peaks—which has produced the marked altitudinal zonation in the rainfall, humidity, climate, and vegetation is also responsible for the great variety and numerical abundance of the resident bird life, making Sikkim perhaps the richest area of its size anywhere in the world.

Over 400 species of birds are described in detail, including field characters, status and habitat, distribution outside Sikkim, general habits, nesting, and racial characteristics, measurements, etc. The book is illustrated with seventeen coloured plates, depicting 140 species, by Paul Barruel, David Reid-Henry, and Robert Scholz in the traditional high standard of these bird artists, and beautifully reproduced. In addition there are thirty-six black and white drawings by Paul Barruel and Walter Ahrens, and a number of photographic illustrations which give an excellent idea of the various habitats.

It is regrettable that the index falls far below the standard of the rest of the book.

P. B-S.

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THE BIRDS OF CHESHIRE. By T. Hedley Bell. John Sharratt and Son, Altrincham, 1962. Price 30*s.* net.

Though, as the author points out, the ornithology of Cheshire has been well documented, especially by the late T. A. Coward and Charles Oldham, their last work was published in 1910. The purpose of the present work is to publish all records and information since 1910 and the author gives full credit to those from whom he obtained data, in particular the late A. W. Boyd.

He includes a history of recording, coverage by recorders, and a topography in which he gives an account of the changes since the publication of Coward's book. This is followed by summaries of related species and a systematic list of 289 species and sub-species found in the county, in which an attempt is made to give an assessment of the status

of every species. There are a number of good photographs of various areas in the county showing the widely differing habitats but the illustrations of birds are confined to six species. Three of these are recent additions to the breeding birds of Cheshire, the Collared Dove, Pied Flycatcher, and Little Ringed Plover. There are also three illustrations of Wilson's Phalarope, believed to be the first photographs taken in Britain of this rare American species. A clear and helpful map completes the book.

P. B-S.

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CORRESPONDENCE

THE CONDITION OF AVIARY BIRDS DURING THE EXCEPTIONALLY SEVERE WEATHER IN JANUARY, 1963

It may be interesting to put on record experiences during the recent cold spell.

On 22nd, 23rd and 24th January, the minimum temperatures here were −3° F., −1° F., and −1° F. respectively, and were still as low as this at 8 a.m. the following mornings. My aviary heating proved quite inadequate to cope with such conditions.

The small bird quarters have wooden shelters 4 feet square by 6 feet high. Each has a half-kilowatt heater. The inside temperature fell to 27° F.; Hunting Cissa, White-crested Laughing Thrushes, three species of Glossy Starling and various whydahs, waxbills and foreign finches were, as far as I could tell, not in the least inconvenienced.

Four Crowned Cranes were in a shelter 8 by 8 by 8 feet made of concrete blocks and with one kilowatt heating. Here the temperature fell to 20° F. but there was no sign of frost-bite on legs or feet.

Flamingoes were in a wooden shed without heat but with straw over peat on the floor. Here the minimum temperature was 5° F. and so far they seem none the worse.

Lilford and Demoiselle Cranes were in the open and did not even make use of a roofed shelter of wattle hurdles. They have survived 35° of frost— −3°F, without any apparent discomfort. Maybe they would not have fared so well if there had been any wind. Conditions were calm throughout.

I have had no losses amongst waterfowl. It seems curious, however, that they eat much less in really cold weather than normally.

Lady Amherst's, Silver and Golden pheasants and a Blue Crossoptilon were quite happy in the open with only rather sparse shrubs for cover.

G. Ronald Pryor.

Brookside,
Calver,
Nr. Sheffield.

How our birds have survived this winter I do not know, but they all appear to be as cheerful and fit as usual. We had 20 degrees of frost and deep snow on the aviaries so that for weeks the birds never really saw daylight ; their food froze as well as their drinks, nectar as well as water. None of the outdoor aviaries have any heat and the parrakeet aviaries have very little shelter, but the birds seemed absolutely immune to cold. We have mynahs, a toucanette, a mountain tanager, a redstart, doves and seedeaters outside. Indoors we could not get the birdroom above 40 degrees when the power cuts were on, and the birds were as happy as can be. I also had flocks of wild birds to feed ; they all lined up in trees waiting for me. Masses of Chaffinches

and Greenfinches, Tits, Hedgesparrows, Starlings, Blackbirds, Robins, a pair of Greater-spotted Woodpeckers, Rooks, Jays (one I believe to be one I brought up by hand), a Nuthatch, and a Marsh Tit. I had to feed them three times a day in the really cold weather and still feed them once or twice a day.

Sybilla Anderdon.

Henlade House,
Taunton.

* * *

CORRIGENDUM

In "News and Views" in the January–February, 1963, number of the Magazine it was reported that a pair of Hume's Bar-tailed Pheasants had been received by the Berlin Zoo (West). The birds were in fact received by the Berlin Zoo (East) and the Editor much regrets this mistake.

THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December, 1962

RECEIPTS

	£	s.	d.	£	s.	d.
To Balance at Bank, 1st January, 1962				107	2	1
,, Subscriptions						
Arrears	4	0	0			
Current	1,000	1	3			
In advance	226	7	5			
Life	105	0	0			
				1,335	8	8
,, Donations				114	18	3
,, Sales of Magazines				278	17	9
,, Sales of *Grebes*					13	2
,, Sales of waterfowl rings				9	17	0
,, Sales of coloured plates				2	18	8
,, Advertisements				167	12	7
,, Dividends				70	8	6
,, Drawn from Reserves				130	18	4
				£2,218	15	0

PAYMENTS

	£	s.	d.
By Printing of Magazine	1,527	11	6
,, Coloured plates	280	7	10
,, Authors' separates	15	2	0
,, Sundry printing and stationery	83	11	3
,, Printer's service charges	29	17	6
,, Honorarium to Editor	100	0	0
,, Secretarial	52	0	0
,, Preparation of Index	15	15	0
,, Expenses at Council Meetings	6	10	6
,, Medals and engraving	41	10	6
,, Postages	48	8	6
,, Bank charges and cheque books	8	18	0
,, Miscellaneous expenditure	9	2	5
	£2,218	15	0

This Statement has been prepared from the books, records and vouchers of the Avicultural Society, and is in accordance therewith.

LONDON.
28th February, 1963.

J. WATKIN RICHARDS } *Hon. Auditor.*
Certified Accountant. }

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James Crosbie Dawson, Northington Farm, Overton, Nr. Basingstoke, Hants. Proposed by H. Cowley.

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NEW MEMBERS

The ten Candidates for Election in the January–February, 1963, number of the Avicultural Magazine were duly elected members of the Society.

CHANGE OF STYLE

Mrs. Gerald Grosvenor, to The Duchess of Westminster.

CHANGES OF ADDRESS

W. G. Baird, to 35 Franklin Avenue, Palmerston North, New Zealand.

J. Boyko, to Heather View, Off Main Road, Fishpool, Notts.

Hartley Brown, to Broadgate, Buckden, Huntingdon.

A. U. Chapman, to DeVeaux School, Niagara Falls, New York, U.S.A.

Robert J. Gregory, to 6 Coles Street, Clearview, South Australia.

Dr. J. R. Hodges, to Craignair, Cuckoo Hill, Pinner, Middx.

H. Alan Johnson, to 3815 Higuera Road, San Jose 22, California, U.S.A.

John W. Livermore, to The Old Stone House Farm, P.O. Box 172, West Redding, Conn., U.S.A.

Henning Madsen, to Gyldendal, Lihme, Denmark.

Robert F. Marshall, to The Lodge, Dulwich Park, College Road, London, S.E. 21.

C. H. Melvin, to 705 Erbes Road, Thousand Oaks, California, U.S.A.

J. H. Noon, to 16 Leamington Close, Hounslow, Middx.

G. N. W. Parker, to P.O. Box 10018, Linton Grange, Port Elizabeth, S. Africa.

Russell Regnery, to 488 Westridge Drive, Menlo Park, California, U.S.A.

A. Rutgers, to "De Oelehof", Joppelaan 60, Gorssel, Holland.

Paul E. Schneider, to 11354 Osborne Street, Lake View Terrace, California, U.S.A.

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R. Grantham		10	0
Dr. J. R. Hodges		10	0
A. H. Isenberg	1	10	0
J. Kingston		10	0
J. Spedan Lewis	5	0	0
N. Macleod	1	0	0
Aage Madsen	1	0	0
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S. Murray	2	0	0
P. G. Paris		10	0
C. J. Pearson	2	5	0

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Birds



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VOL. 69 No. 3 PRICE 7/6 MAY–JUNE 1963

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Founded 1894

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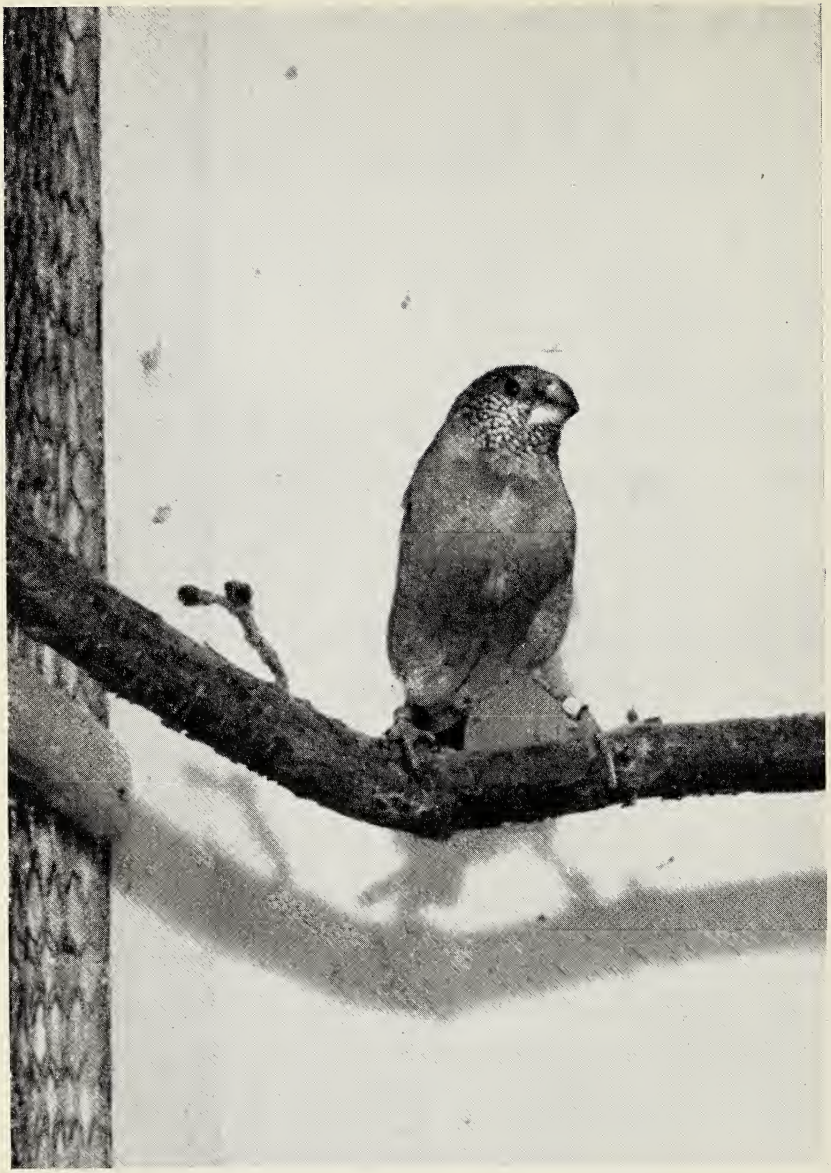
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THE AVICULTURAL MAGAZINE

The Magazine is published bi-monthly, and sent free to all members of the Avicultural Society. Members joining at any time during the year are entitled to the back numbers for the current year on the payment of subscription. All matter for publication in the Magazine should be addressed to :—

The Editor : Miss Phyllis Barclay-Smith, 51 Warwick Avenue, London, W. 9. Telephone : Cunningham 3006.

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GREY-HEADED SILVERBILL (*Odontospiza caniceps*)

[*Frontispiece*

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

Vol. 69.—No. 3.—*All rights reserved.* **MAY–JUNE, 1963**

BREEDING OF THE GREY-HEADED SILVERBILL

(Odontospiza caniceps)

By W. Langberg (Copenhagen, Denmark)

The African Weaver Finch *Odontospiza caniceps* has popularly been called Grey-headed Silverbill, in English as well as in German. Recent scientific investigations made by the well-known Swiss ornithologist Professor Dr. Hans Steiner in Zürich, show that this species is, however, closely related to the Bronze Mannikins (*Spermestes*) and not to the Silverbills (*Euodice*). In the Estrildidæ, now usually considered as a family and not, as earlier, a sub-family of the Ploceidæ, weavers, the different palate markings of the nestling young have been considered as the main guide in the determination of the relationship between the different genera. There is a pronounced identity between the palate markings of the young of the *Spermestes*-species and *Odontospiza*, not occuring in any other species of Estrildidæ, and quite different from those of *Euodice*. As a result of his examinations Professor Steiner considers *Odontospiza* as a sub-genus of *Spermestes*. Professor Steiner therefore suggests the name Perlhals-Amadine in German for this species. (Translated into English " Pearl-throated Mannikin ".) This decision was arrived at from examination of newly hatched young, partly supplied by me, partly from his own birds, as well as both his and my observations of the birds' behaviour and my descriptions of the colour of young birds.

The length of the bird is about 4 inches, and it is slim and elegant in shape. There is some resemblance in colour to the Parson Finch, except for the small feathers reaching from below the eye over the cheeks and the throat, which are of a pearl-like colour instead of white. The head is dark grey, this colour reaching right down to the back. The chest is of a warm brown colour, toning lighter on the belly. The back is also brown, rump, upper and under tail-coverts being white. Primaries, secondaries, and tail feathers are black. The upper mandible is dark grey, the under mandible somewhat lighter. The legs are dark horn coloured. The eyes black.

Two consignments, I believe about 200 birds in all, reached Switzerland in September–October, 1961. They were offered as a first importation, but according to Mr. Yealland of the London Zoo, they

SMITHSONIAN INSTITUTION JUL 3 1963

were imported in 1929–30 by De Von, and four specimens were in the Regent's Park Zoo at that period. (*Foreign Birds*, May–June, 1962.) As far as he knows the species has not bred in England, and he does not know whether the species had even been bred in captivity.

The two consignments were imported at the request of Professor Steiner by the Zürich bird dealer Theodor Waech, who, with the assistance of Mr. Surber of the same town, found a collector in Mozambique willing to catch the birds in question. Professor Steiner was anxious to obtain live birds of this species for studies of their behaviour, palate markings of the young (which were not earlier known), and other characteristics of the species, in order to reach a final decision as to their relation to other species and hence their correct place in systematics. No doubt this importation would not have taken place, if the birds had not been important to fill a gap in Professor Steiner's systematic studies, and we owe him our thanks for the great efforts he made to find a collector in Africa, interested in the matter. I am glad to state that these efforts have not been made in vain and that the systematic position of *Odontospiza caniceps* now seems to be settled.

About 1st November, 1961, I got a consignment of these birds together with some other birds, Grenadier Waxbills and Blue-headed Cordon-bleus. I observed that the chest colour of some of the birds was darker than that of others. One bird was sick on arrival and died within a few days. The post-mortem examination showed that it was a hen. The chest colour of this bird was rather light, and I now sorted out all my *Odontospizas* by means of the chest colour. Up to now all the birds with the darker colour have been cocks. The cock has a nice little song, executed with the head stretched upwards, with the open beak moving when singing.

At the end of November the birds seemed to be in good condition and I chose a cock, which semed particularly strong and active. This I put in a flight in my bird room. In the flight, approximately 8 by 2½ by 2 feet, I had breeding pairs of Peale's Parrot Finch, Painted Finch, and Gouldian Finch. A week later I put a hen *Odontospiza* in the flight. The cock was immediately very interested and started to sample coconut fibres on the wooden top of a basket nest. The hen flew to a small shrubbery which I had made for the Peale's Parrot Finches and sat there calling for the cock. A bit later I observed the cock jumping on a perch in the manner of common Bronze Mannikins.

The birds, however, did not make any serious attempts at nest-building and at last chose an old nest, by the way, the same one the Peale's Parrot Finches had used the first time they bred. Later on I have also observed with other pairs of the species that they usually prefer to use an old nest, and only repair it sparingly with some coarse material.

On 22nd January, 1962, I observed that the hen showed the

characteristic signs of starting to lay, and on 26th January, the first egg was laid in the old Peale's nest. On the 28th a second egg was laid, but no more followed. No attempts to sit were observed and I therefore removed the eggs. The shell was rather thin and chalk-white, size about 16 by 10 mm.

The birds, however, started again immediately, and on 5th February, the first egg was laid, totalling five in all by 9th February. This time the birds sat, but mostly the hen only, the cock occasionally taking over the job for a few minutes. On 25th February, I examined the nest when the hen was out of it and felt that there were young. On the next day there was obviously something wrong. Later in the day I had an occasion to examine the nest and found a dead chick, which had obviously not been fed and therefore starved. This was removed and some days later the remaining eggs also, as the birds did not care about them. Both birds always spent the night in the nest and also a part of the day. On 3rd March there was again an egg. This time I did not disturb the birds and therefore do not know the number of eggs and when the sitting started. I observed, however, that this time both birds took turns in sitting, as is usual with the Weaver Finches. On 24th March I had the impression that there were young ones in the nest, and when putting in a finger I felt there were living young.

As to feeding: canary seed, different millets (white, Indian, Algerian, Japan, and spray millet) Niger and grass seeds were given all the time. Every day fresh sprouted seed (white and yellow millet), hard-boiled egg mixed with a German proprietary food (Claus' Aufzuchtfutter) and milksop with vitamins added. Mealworms were eagerly taken, and gradually as the youngsters grew, the consumption became bigger. I had the impression that the young were mainly reared on mealworms. The pair spent much time inside the nest, but as soon as I came with mealworms they immediately flew out, hung on the netting and were very interested. As soon as the mealworms were given the birds went straight to the nest. When both the birds were outside I sometimes put a finger in the nest in order to see if the young were still alive. On 1st April I heard for the first time the young begging when the parents fed them. The sound was very weak and at first I thought it was the song of the Gouldian cock, but when I put my ear nearer the nest I could clearly hear that the sound came from it.

When the *Odontospiza* pair Nr. 1 was sitting on the eggs I had, a bit improvidently, put a pair of Grenadier Waxbills in the same flight, as I had the impression that the waxbills were inclined to nest, and this flight seemed to suit them. Unfortunately they selected the shrubbery where the *Odontospizas* nested and started to build. They did not allow the *Odontospizas* to come near the nest, and in order to save the young from starvation I had, much to my vexation, to remove the Grenadier Waxbills again.

Every Friday is cleaning day in the birdroom. Even though I did not dare to clean the *Odontospizas*' flight, I removed some droppings and sprinkled some new sand on the bottom. I was shocked when I saw the cock *Odontospiza* take a lot of sand and fly right to the nest of young with lots of sand around his beak. I imagined him filling the young with sand and thought all sorts of disasters would follow. Next day I had an opportunity to inspect the nest and put in a trembling finger expecting to find all the young cold and lifeless. I was happy when I felt the warm young moving and lively.

At last the time came when I expected the young to leave the nest. 14th April was the birthday of our daughter and some days earlier I had promised her that the young would leave the nest on her birthday. I had the great luck that on that very day at 9.45 in the morning the first two young came out, and at 11.15 a.m. the third one was on the perch. The parent birds were somewhat nervous and obviously worried about the young, which flew around rather helplessly. One of the young ones was not able to fly up to the perch, when on the floor. I made a kind of ladder from the floor to the perch, and this helped somewhat. Later I observed, however, that this particular youngster had a defective wing and a crooked leg and still had some difficulty in reaching the perch.

When I saw the young outside for the first time it struck me that they had a great likeness to the small Bib Finch (*Lemuresthes nana*) from Madagascar, a species related to the Bronze Mannikins. The colour of the young *Odontospizas* is paler and more washed-out than that of the adult birds. Head and neck are grey but without the small white feathers which make the colour of the adult birds so decorative. On the day the young left the nest Mr. A. Ryder Tönnesen—a member of the Avicultural Society—visited me and saw the birds, and on 18th April another fancier, Mr. A. V. Nielsen visited me and saw the young being fed by the parents.

The young were fed for a considerably long time after leaving the nest. In the nest the voice, as stated, was rather weak when begging, but after flying out the voice grew stronger and could be described as something like *drrrr zirp*. When fed the young take a horizontal position on the perch with their heads stretched a bit upwards, at the same time lifting and quivering the flight feathers and uttering the *drrrr zirp*, *drrrr zirp* sounds.

Already on 27th April, when the young had been out of the nest about a fortnight, I saw one of them jumping up and down on the perch, like an adult cock. Later in the day I saw him singing in the characteristic position with the head stretched and the beak open. I could only see that the bird was singing, the voice being so weak that I could not hear it.

On 19th May I observed for the first time that two of the young had

started to grow the small white feathers and already on 8th June, when the birds were about eight weeks old, these two birds had all the small white feathers on the throat, cheeks and neck, exactly like the adult birds. Later on it turned out that these two birds were cocks, whereas I suppose that the third one, which has moulted out more slowly, is a hen.

I have tried to breed with several other pairs of *Odontospiza* and also had young several times. At one time or another they have all, however, stopped feeding the young, and up to now I have only been successful in breeding the above mentioned young by their parents. In order to save something that would else have been lost I have tried to put eggs and young under Bengalese, but with poor success. I have only got two young in this way. On the other hand this gave me a better possibility to study the young birds during their growth.

Professor Steiner also had young from his *Odontospiza* but also in this case the parent birds did not feed them, and they therefore died from starvation.

My impression is, that this species is not very easy to breed. The birds seem quite willing to lay eggs, and even sit on them. They are, however, apparently unreliable feeders, and I am afraid that it will be difficult to maintain the species in captivity, even if a comparatively large number was imported in the autumn 1961. Also the usual short cut, to use Bengalese as feeders, seems to be unreliable with this species.

All my experiences about the breeding of *Odontospiza caniceps* are from indoor cages. I did not have any finches in the garden-aviaries in the summer of 1962 because of the cold and wet weather, but have only kept and bred with my Australian parrakeets and the Grey Parrots outdoors.

I hope we get a better spring and summer in 1963 and if we do I will put some *Odontospiza caniceps* in my outdoor aviaries for breeding. Maybe they will breed more easily there because the birds are able to find more living food to feed their youngsters.

* * *

PARROTS

By E. Maud Knobel (London, England)

All my life I have been interested in parrots and I think I must have had one or two hundred pass through my hands.

I have lived in a big house where they had plenty of room to fly and run about, but lately I have moved into a cottage and had to part with a good many. However, in spite of the smaller space I have managed to keep fifteen of them. The parrots I have kept have been mostly Greys and Amazons. The Greys are undoubtedly the best talkers, but the Amazons are more active and amusing.

Few parrots are being imported these days and nothing rare has come in for a long time. The ones I have at the moment are four Greys, seven Amazons, three Caiques, and one Ring-neck.

The Amazons are the Blue-fronted, two Yellow-fronted, one double-fronted, one Yellow-naped, one Orange-winged, and one Festive. I should like to hear from anyone who has more at the present time.

Macaws are delightful birds to keep especially if they are tame. I have had several, but only two lately, the Blue and Yellow and the Red and Yellow. But the cottage was not big enough for them and I have had to give them away. The Red and Yellow went to that lovely place " Birdland " at Bourton-on-the-Water. He had to be kept in all the winter, but recently I heard that he is now out and free to fly about. He seems to have paid a visit to the school to see the children. I think they must have been astonished at seeing such a big bird.

Caiques make sweet little pets, so tame and confiding. I have three different kinds—the Black-headed, the White-bellied, and a very rare Lutino.

The little Ring-neck was picked up in a garden in Essex. It was advertised, but was never claimed and I was asked if I would give it a home. It had been kept in a stable and I was told it was extremely wild, but when it saw a cage it was delighted to get into it where I think it felt safe and happy. It is in wonderful condition and not a bit wild. The same sort of thing happened during the War. A Ring-neck flew into a room at a convent—the Nuns seemed scared stiff and asked if I would come—I took a cage and the moment the bird saw it, it was only too pleased to get inside. I think it must have escaped from France for it was so tired it slept for a week.

I give here a list of the parrots I have had at different times.

Active, Blue-faced, Blue-fronted, Diademed, Double-fronted, Dufresne, Festive, Finsch's, Golden-naped, Mealy, Orange-winged, Red-throated, Palle's, Vinaceous, Yellow-fronted, both the black beak and the white beak, Yellow-shouldered, *Amazona albifrons*, and *xantholora*. Hawkheads, Ring-neck, Senegal, Meyer's, Dusky Alexandrine, Timor,

Ring-neck, Rosella, Bauer's, Blossom-head, Canary-winged, Cockateil, Bronze-winged, Orange-flanked Tovi and Tui.

Of Macaws, Military, Blue and Yellow, Red and Yellow, Severe Illiger's and Hahn's, Cockatoos, Sulphur-crested, Leadbeater's, Lesser Sulphur-crested, Rose-breasted, and a very small dwarf Cockatoo.

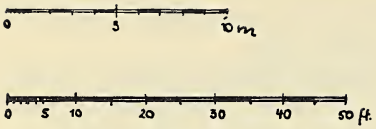
* * *

THE NEW BIRD HOUSE IN THE BERLIN ZOO

By Dr. Heinz-Georg Klös,
Director, Berlin Zoological Gardens (Germany)

At the beginning of December, 1962, the new Bird House was opened in the Berlin Zoo. As it is more than 3,300 sq. metres in area it must be by far the largest of its kind in the world and naturally all concerned in its construction endeavoured to make it the most beautiful and the most suitable for the birds. In spite of its enormous size the House does not contain long dull rows of cages but by the arrangement of wings of buildings in a square round an open courtyard garden a succession of different and charming vistas are presented. The main entrance, in which there is a mosaic depicting the abundance of colours of the feathered inmates in the adjoining rooms, leads the visitor first to the Parrot Section after a selection of bright exotic birds have greeted him in the special " Reception aviaries ". The Parrots are intentionally in a section quite separate from the rest of the house so that the calls made by these noise-loving birds do not penetrate everywhere and deafen people with sensitive ears. As parrots, with their sharp beaks, destroy wood and every growing plant the vegetation which is carefully preserved all over the House has to be omitted. However, everywhere else tropical vegetation of virgin forests has been allowed to grow so high that already a beautiful natural picture is given. Fountains provide the necessary humidity of the air and in addition, throughout the whole house, each aviary is provided with a " rain-shower " the fine mist from which can be used to spray the birds or to lay the dust. To give an unrestricted view, the front of the aviaries is of glass ; for this, however, we have used as far as possible light, non-reflecting glass in order to avoid the appearance of keeping the birds in an aquarium.

Even in the make-shift quarters which we had previously, the collection of parrots in the Berlin Zoo was by far the richest in Germany. It now consists of over 200 parrots of more than fifty different species and there are some quite unusual rarities among them. Mention must be made of the Keas of New Zealand, the only ones in Germany, the enormous Black Palm Cockatoo, the Cockatoo collection and the select collection of unbelievably beautifully coloured lories.



A Parrot Section.

B North Section.

C Walk-through Aviary.

D South Section.

E Service Section.

F Inner Courtyard.

1 Entrance.

2 Inside aviaries.

3 Outside aviaries.

4 Observation seats.

5 Food kitchen.

6 Keepers' room.

7 Keepers' corridors.

8 Quarantine.

9 Sand store.

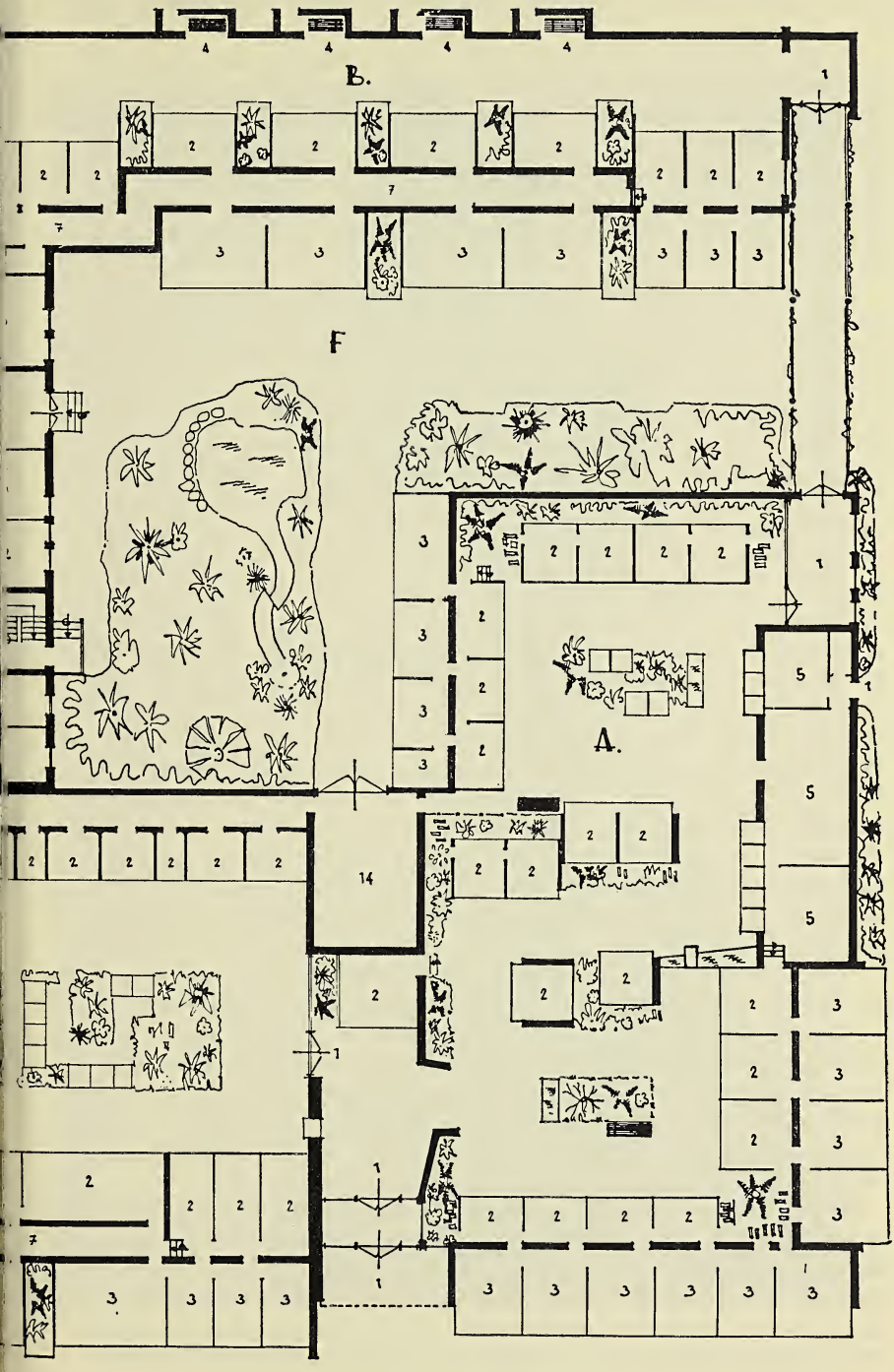
10 Food store.

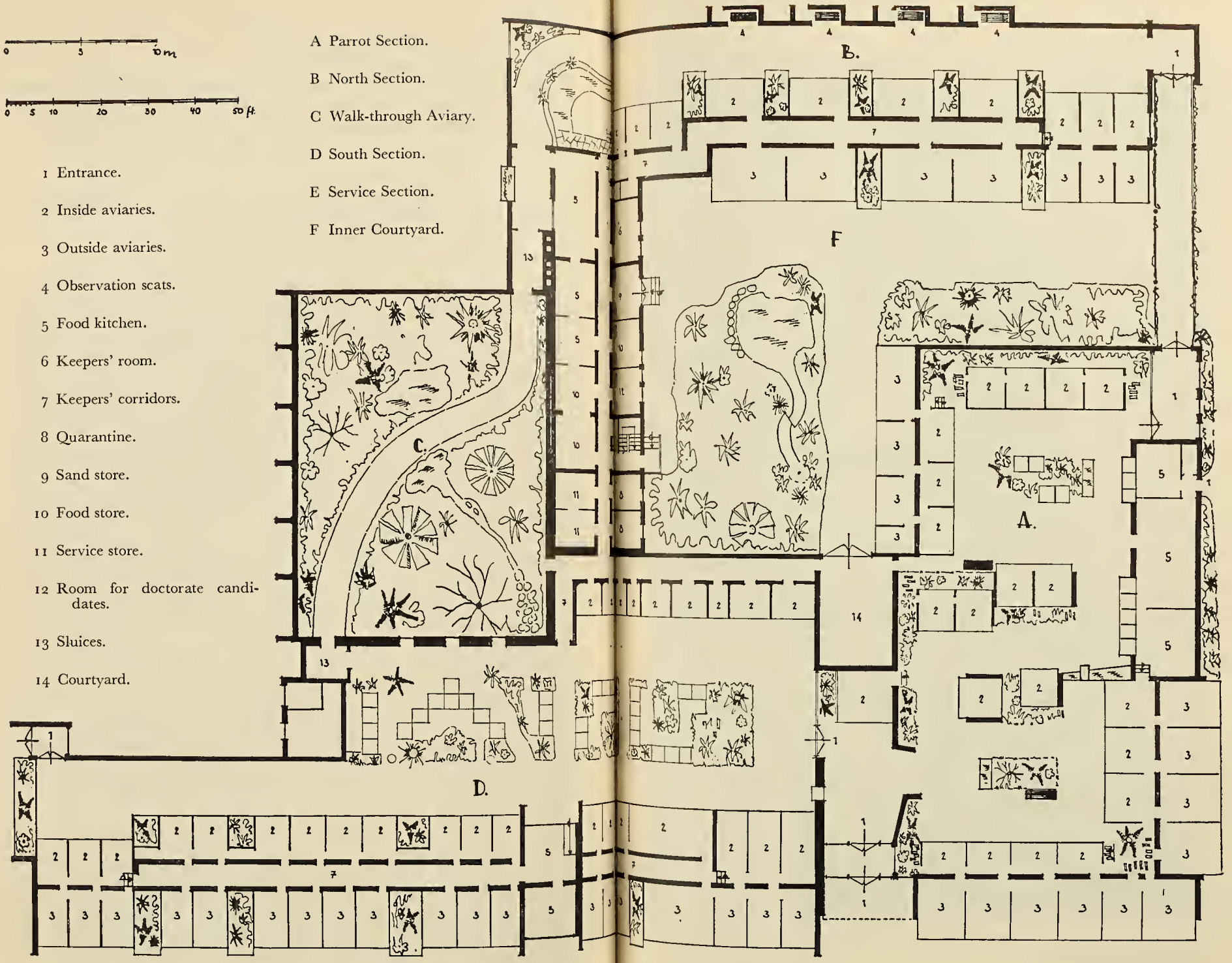
11 Service store.

12 Room for doctorate candidates.

13 Sluices.

14 Courtyard.


B.
F
A.

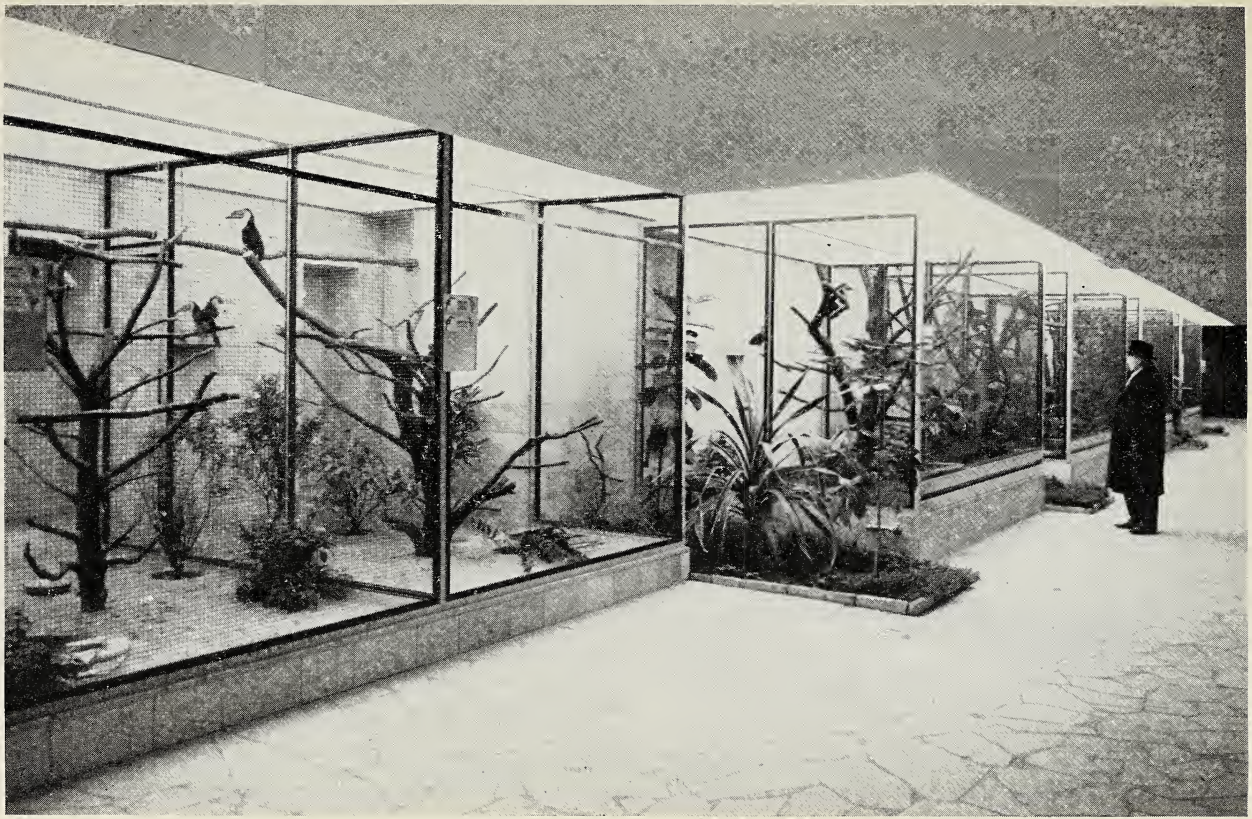

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A Parrot Section.
B North Section.
C Walk-through Aviary.
D South Section.
E Service Section.
F Inner Courtyard.
1 Entrance.
2 Inside aviaries.
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8 Quarantine.
9 Sand store.
10 Food store.
11 Service store.
12 Room for doctorate candidates.
13 Sluices.
14 Courtyard.
A.
B.
C.
D.
F

In the adjoining courtyard, which in the summer can be crossed under a pretty creeper-covered pergola, the parrots which are hardened to cold weather are displayed in large aviaries—the rare Derbyan Parrakeet which extends to Tibet or the Argentine Quaker Parrakeet which later, following the old Berlin Zoo tradition, will be kept fully free-flying. The centre piece of the courtyard, with flower beds planted with interesting Mediterranean plants, is a fountain with steps.

In the North Section which follows is the largest part of the Zoo's collection of Toucans and Touracos and this again has no equal in Germany. A special treasure is the turquoise-blue Giant Touraco of the Congo virgin forests, the only specimen in captivity in a zoo in the whole world ! Next to it is the first importation after the war of four specimens of that peculiar bird the Kagu, which now, owing to the danger of the extinction of this species, is strictly protected. This bird's resounding call is used as the time signal of the South Sea Radio Station Noumea. After passing a pond with Flamingoes and the ornamental South American Ringed Teal, the path leads to aviaries placed in semi-darkness from which Little Owls look out of their hiding places in the natural rock like real goblins. An exhibition showing the autumn migrations of Storks illustrates the fascinating phenomenon of bird migration, while opposite, large observation windows give a glimpse of the principal food kitchen of the service section. Here visitors can see exactly how, under the direction of the experienced " mistress of the house ", Frau Johst, the hundreds of food trays and small dishes are filled with many different kinds of special mixtures. The synthetic nectar for the Humming Birds is brewed in " mixers ", sugar, tinned milk and honey form the food for the lories, and seeds, nuts, and kernels are chosen from the innumerable drawers of the large wall-cupboards and carefully and individually mixed for the seed-eaters.

The South Section of the Bird House is certainly the most diverse of the whole complex. Here are large aviaries in which brightly-coloured weaver birds build their elaborate fibre nests in the branches, here is the large enclosure for waders in the form of a carefully-maintained muddy habitat in which plovers, avocets and sandpipers are shown in particularly good condition, here also are the brightly coloured Bee-eaters and the Tiger Bittern from the primeval forests of the Amazon demonstrates its acrobatic contortions.

In the centre hall aviaries placed among flower beds principally contain delicate species of birds and those who keep cage-birds will be particularly interested and perhaps a little envious. Much the most beautiful are the scenic backgrounds of the Jewel room. Here the Zoo gardeners and workmen have created miniature habitat backgrounds in the most remarkable way, in which the " jewels " of the bird world—



[To face p. 106

Copyright]

[Berlin Zoological Garden

North Section with Aviaries for Toucans and Touracos.



Copyright]

[Berlin Zoological Garden

In the Walk-through Aviary no Bars Separate the Visitor from the Winged Inhabitants of a Jungle Landscape.

Humming Birds, Cocks of the Rock, Sugar Birds, etc., are shown in a completely natural setting. On the branches of thorn bushes in the middle of the red-gold wastes of a desert habitat sit African Rollers, Ruby-throated Humming Birds whirr back and forth in front of great orchid blooms in the subdued light of a virgin forest, or Argentine Crakes scurry from sight like mice through a tropical thicket of rushes.

The high-point of a visit to the 190 aviaries of the new Bird House is undoubtedly the walk-through aviary. Without being separated from the winged inhabitants by a wire-netting or other partition, visitors may walk on a winding forest path through a luxuriantly planted tropical landscape ; irridescent Glossy Starlings, Drongos, and Bulbuls fly around overhead, dainty rails scurry over the path, Barbets climb up and down the waving lianas, and in a small clearing Crocodile birds and beautiful Scarlet Ibises wade about in water-lily pools. The dazzling blooms of the parasitic plants shine from the enormous tree trunks and at the side exotic Mud-Turtles dive with lightning speed into a splashing woodland stream as the visitor approaches—in fact a true fairyland has been created.

In spite of all this the Bird House with its 190 large aviaries only meets the need of a part of the Zoo's collection of birds ; the larger species such as the gleaming brightly coloured pheasants, the Crowned Pigeons of New Guinea, the velvet-red Tragopans of the Himalayas, the Shoebill or the huge Argus Pheasant are housed in the new Pheasantry which, just completed, 160 metres in length and containing a large hall for the public, observation kitchens and observation breeding-pens, cannot be equalled elsewhere. It is the fourth Pheasantry to be constructed during the 120 years of the history of the Berlin Zoological Gardens and naturally we have endeavoured to utilize to the best advantage the experience accumulated in the passage of time. Pheasant breeding and rearing, formerly a speciality of Geheimrat Heck, will now be carried on by Heinrich Schwarz, the oldest animal keeper in Germany still in service, who was recently decorated with the " Bundesverdienstkreuz ", and undoubtedly this new large installation will prove a flourishing rearing place.

* * *

THE GENETICS OF THE YELLOW-MASKED GOULDIAN FINCH

By Ray Murray (Camberwell, Victoria, Australia)

Introduction

Southern[1] has described the behaviour of the gene which controls the red- and black-masked phases of the Gouldian finch (*Poephila gouldiae*, Gould). This article discusses the behaviour of the gene which controls the production of the much rarer yellow-masked phase.

Mr. L. Webber of Epping, N.S.W. assisted me in carrying out this work on the yellow-masked phase.

Red and Black Masked Phases

The results of Southern's work may be summarized as follows :

As far as the red and black phases are concerned, the colour is controlled by a single sex-linked gene, the colour for red being dominant to black. Thus for the red and black phases there are five different types of birds. These are

Phenotype.	*Genotypes.*	
	Cocks.	*Hens.*
Red	RR, Rr	RO
Black	rr	rO

For the above types of birds there are therefore six possible matings. The expected results from these matings are shown in Table 1.

Table 1

Mating		Expected Results				
Parents		Cocks			Hens	
Cock	Hen	RR (red)	Rr (red/black)	rr (black)	RO (red)	rO (black)
RR (red)	RO (red)	% 100	%	%	% 100	%
RR (red)	rO (black)		100		100	
Rr (red/black)	RO (red)	50	50		50	50
Rr (red/black)	rO (black)		50	50	50	50
rr (black)	RO (red)		50	50		100
rr (black)	rO (black)			100		100

[1] Southern, H. N. *Journal of Genetics*, Vol. 47, No. 1, July, 1947.

The Yellow-masked Phase

The results of crossing yellow-masked Gouldians and their progeny with the other two phases show that the yellow is a modified red phase. The factor which controls the production of yellow is recessive, autosomal and thus independent of the sex-linked factor which controls the production of the black or red. Where a bird is homozygous for the yellow modifying factor but is without the red factor, the bird has a yellow tipped beak instead of the usual red tipped beak.

There are therefore nine different types of cock birds and six different types of hens which concern us. If the symbol " y " is used to denote the " yellow " factor the various types of birds may be designated as follows :—

Cocks	Genotype	Phenotype
Pure red	RRYY	Red
Red/yellow	RRYy	Red
Pure yellow	RRyy	Yellow
Red/black	RrYY	Red
Red/black/yellow	RrYy	Red
Yellow/black	Rryy	Yellow
Black (type a)	rrYY	Black
Black (type b)	rrYy	Black
Black (type c)	rryy	Black (yellow beak)
Hens		
Red	ROYY	Red
Red/yellow	ROYy	Red
Yellow	ROyy	Yellow
Black (type a)	rOYY	Black
Black (type b)	rOYy	Black
Black (type c)	rOyy	Black (yellow beak)

From the fifty-four possible matings, the following were made.

Mating	Cocks		Hens
1	RRyy	×	rOYY
2	RrYy	×	ROYy
3	RrYy	×	rOYy
4	Rryy	×	ROyy
5	Rryy	×	rOYy
6	rrYY	×	ROyy
7	rryy	×	rOyy
8	rryy	×	ROyy

In the progeny of these matings it was not possible to distinguish, by appearance, between birds having the same head colour but of different genotype. For example, it was not possible to distinguish

between a pure red (RR) and a red/black (Rr) bird both of which have red masks.

The progeny of the various matings fall into eight groups according to phenotype and sex.

Phenotype	Genotypes	
	Cocks	Hens
Red	RRYY, RRYy, RrYY, RrYy	ROYY, ROYy
Yellow . . .	RRyy, Rryy	ROyy
Black (red beak) .	rrYY, rrYy	rOYY, rOYy
Black (yellow beak) .	rryy	rOyy

In comparing the actual results with the theoretical, the significance of the non-appearance of certain types will be appreciated. For example a yellow cock mated to a yellow hen does not produce a red bird. Absence of red birds in the progeny is one of the main proofs of the correctness of the hypothesis.

The genotypes of the parents were, with the exception of black (type c) birds, determined either from breeding results of the birds themselves when tested with other birds of known genotypes or from their parentage. Type *c* birds were assumed to be pure for both recessive factors. Thus in mating 1, the cock birds, bred from yellow parents produced no black progeny when mated with black hens. Similarly the hen (rOYY) produced no yellow or black (type c) birds when mated with yellow cocks. The parents in mating 2 were the progeny of mating 1.

Mating No. 1.

Homozygous yellow cock (RRyy) × Black (type a) hen (rOYY). The germ cells for the yellow cock is Ry only and for the black (type a) hen rY and OY.

The theoretical result is :—

Cocks RrYy Red/yellow/black and hens ROYy red/yellow.

There were nineteen young bred from this mating and the results were :—

	Cocks.	*Hens.*
Red . . .	12 (12)	7 (7)
Yellow . . .	0 (0)	0 (0)
Black . . .	0 (0)	0 (0)

(The figures shown in brackets are the expected results).

Mating No. 2.

Red/yellow/black cock (RrYy) × red/yellow hen (ROYy). The germ cells for the red/yellow/black cock are RY, Ry, rY and ry. For the red/yellow hen RY, Ry, OY and Oy.

The theoretical result is :—

Cocks $\frac{1}{8}$ RRyy yellow, $\frac{1}{8}$ Rryy yellow/black, $\frac{1}{4}$ RRYy red/yellow $\frac{1}{4}$ RrYy red/yellow/black, $\frac{1}{8}$ RRYY red, $\frac{1}{8}$ RrYY red/black $= \frac{1}{4}$ yellows, $\frac{3}{4}$ red.

Hens $\frac{1}{8}$ ROyy yellow, $\frac{1}{8}$ rOyy black (type c), $\frac{1}{4}$ ROYy red/yellow, $\frac{1}{4}$ rOYy black (type b), $\frac{1}{8}$ ROYY red, $\frac{1}{8}$ black (type a) rOYY ; $= \frac{1}{8}$ yellows, $\frac{3}{8}$ red, $\frac{3}{8}$ black and $\frac{1}{8}$ black yellow beak.

Fifty-two young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red	16 ($15\frac{3}{4}$)	9 ($11\frac{5}{8}$)
Yellow	5 ($5\frac{1}{4}$)	2 ($3\frac{7}{8}$)
Black	0 (0)	19 ($11\frac{5}{8}$)
Black yellow beak . .	0 (0)	1 ($3\frac{7}{8}$)

Mating No. 3.

Red/yellow/black cock (RrYy) × black hen (type b) (rOYy). The germ cells for the red/yellow/black cock are RY, Ry, rY, ry and for the black hen (type b) rY, ry, OY and Oy.

The theoretical result is :—

Cocks $\frac{1}{8}$ Rryy yellow/black, $\frac{1}{8}$ rryy black yellow beak, $\frac{1}{4}$ RrYy red/yellow/black, $\frac{1}{4}$ rrYy black (type b), $\frac{1}{8}$ RrYY red/black, $\frac{1}{8}$ rrYY black (type a). $= \frac{1}{8}$ yellow, $\frac{3}{8}$ red, $\frac{3}{8}$ black, $\frac{1}{8}$ black yellow beak.

Hens $\frac{1}{8}$ ROyy yellow, $\frac{1}{8}$ rOyy black yellow beak, $\frac{1}{4}$ ROYy red/yellow $\frac{1}{4}$ rOYy black (type b), $\frac{1}{8}$ ROYY red, $\frac{1}{8}$ rOYY black (type a). $= \frac{1}{8}$ yellow, $\frac{3}{8}$ red, $\frac{3}{8}$ black and $\frac{1}{8}$ black yellow beak.

Nine young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red	1 ($1\frac{1}{2}$)	2 ($1\frac{7}{8}$)
Yellow	1 ($\frac{1}{2}$)	1 ($\frac{5}{8}$)
Black	2 ($1\frac{1}{2}$)	2 ($1\frac{7}{8}$)
Black yellow beak . .	0 ($\frac{1}{2}$)	0 ($\frac{5}{8}$)

Mating No. 4.

Yellow/black cock (Rryy) × yellow hen (ROyy). The germ cells for the yellow/black cock are Ry and ry, for the yellow hen Ry and Oy.

The theoretical result is :—

Cocks $\frac{1}{2}$ RRyy yellow and $\frac{1}{2}$ Rryy yellow/black = all yellows.

Hens $\frac{1}{2}$ ROyy yellow, $\frac{1}{2}$ rOyy black yellow beak = $\frac{1}{2}$ yellow $\frac{1}{2}$ black yellow beak.

Fourteen young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red	0 (0)	0 (0)
Yellow	6 (6)	3 (4)
Black	0 (0)	0 (0)
Black yellow beak . .	0 (0)	5 (4)

Mating No. 5.

Yellow/black cock (Rryy) × black (type b) hen (rOYy). The germ cells for the yellow/black cock are Ry and ry and for the black hen (type b) rY, ry, OY and Oy.

The theoretical result is :—

Cocks $\frac{1}{4}$ Rryy yellow/black, $\frac{1}{4}$ rryy black yellow beak, $\frac{1}{4}$ RrYy red/yellow/black, $\frac{1}{4}$ rrYy black (type b). = $\frac{1}{4}$ yellow, $\frac{1}{4}$ black yellow beak, $\frac{1}{4}$ red, $\frac{1}{4}$ black.

Hens $\frac{1}{4}$ ROyy yellow, $\frac{1}{4}$ rOyy black yellow beak, $\frac{1}{4}$ ROYy red/yellow, $\frac{1}{4}$ rOYy black type b). = $\frac{1}{4}$ yellow, $\frac{1}{4}$ black yellow beak, $\frac{1}{4}$ red, $\frac{1}{4}$ black.

Thirteen young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red	3 ($1\frac{3}{4}$)	2 ($1\frac{1}{2}$)
Yellow	1 ($1\frac{3}{4}$)	2 ($1\frac{1}{2}$)
Black	2 ($1\frac{3}{4}$)	1 ($1\frac{1}{2}$)
Black yellow beak . .	1 ($1\frac{3}{4}$)	1 ($1\frac{1}{2}$)

Mating No. 6.

Black (type a) cock (rrYY) × yellow hen (ROyy). The germ cells for the black (type a) cock is rY only and for the yellow hen Ry and Oy.

The theoretical result is :—

Cocks All RrYy red/yellow/black. Hens all rOYy black (type b).

Four young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red . . .	1 (1)	0 (0)
Black . . .	0 (0)	3 (3)

Mating No. 7.

Black yellow beak cock (rryy) × black yellow beak hen (rOyy). The germ cells for the black yellow beak cock is ry only and for the black yellow beak hen ry and Oy.

The theoretical result is :—

Cocks All rryy black yellow beak. Hens all rOyy black yellow beak.

Seventeen young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red	0 (0)	0 (0)
Yellow	0 (0)	0 (0)
Black	0 (0)	0 (0)
Black yellow beak . .	7 (7)	10 (10)

Mating No. 8.

Black cock yellow beak (rryy) × yellow hen (ROyy).
The germ cells for the black cock yellow beak is ry only and for the yellow hen Ry and Oy.

The theoretical result is :—

Cocks All yellow/black Rryy. Hens all black yellow beak rOyy.

Nine young were bred from this mating and the results were :—

	Cocks.	*Hens.*
Red	0 (0)	0 (0)
Yellow	4 (4)	0 (0)
Black	0 (0)	0 (0)
Black yellow beak . .	0 (0)	5 (5)

The author expresses his sincere thanks to Mrs. Harman of California, who furnished information on the mating of birds with yellow tipped beaks and to Messrs. K. H. Danks, B.Sc., B.Com., and A. Bowden, both of Melbourne for their help in the interpretation of results and the preparation of this article.

* * *

SOME BEHAVIOUR OF A CAPTIVE RED-BILLED OXPECKER

By Derek Goodwin (London, England)

The oxpeckers, also known as Tick Birds and Rhinoceros Birds are a highly specialized genus of passerines. (I hope those of my readers who know this will pardon and skip over the first paragraph of this article, which is merely to put those who don't " in the picture ".) They spend most of their time resting or climbing about the bodies of large herbivorous mammals such as buffaloes, antelopes, warthogs, rhinoceroses, and domestic cattle. Only two species exist, both confined to Africa. These are the Yellow-billed Oxpecker (*Buphagus africanus*) and the Red-billed Oxpecker (*Buphagus erythrorhynchus*). Both are dull brown in colour with buffish belly and flanks, the Yellow-billed having also a buff rump. The bill of the latter species is (despite its name) parti-coloured, being yellow only for the basal half, its tip being a most vivid scarlet red. The bill of the Red-billed is red but sometimes with some

yellow along the cutting edge. Both nest in holes in trees or buildings. They feed largely on ticks but also, apparently, sometimes take blood or other liquid matter from wounds on animals. They do not appear to incommode the wild animals that they batten on, but have been accused of injuring domestic cattle by pecking at wounds and thus preventing them from healing. It need hardly be said that the wounds in question have usually been inflicted by man, but that does not lessen his resentment at the oxpeckers' behaviour.

At the moment (March, 1963) the London Zoo has one oxpecker of each species. The Yellow-billed is in an aviary, with a contrivance of canvas to simulate the body of a large mammal, for it to perch on. It is not very tame (as Zoo birds go) but sometimes shows what is either a



Captive Yellow-billed Oxpecker giving begging or soliciting display to its reflection in rim of food dish.

food-begging or sexual-solicitation display towards human beings. In this it adopts a horizontal posture and flutters its wings (see sketch). It has an aluminium food dish and I have often seen it crouching so that it can look and see its reflection in the narrow rim and reacting to each good view of its image with a spasm of wing-fluttering. However, interesting as this pathetic enforced narcissism is in its way, the behaviour of the Red-billed Oxpecker is even more so.

This latter bird is kept in a cage with a similar hessian " ersatz mammal " to perch on. When it first arrived at the Zoo it was hardly out of its fledglinghood (it does not yet appear to be fully mature as its bill is only just getting red) and Mr. John Yealland informs me that it had been taken as a nestling and hand-reared. It is in good condition and, at any rate with people on the other side of the bars, completely tame and unafraid. When it sees Mr. Yealland, whom it recognises at a distance, it gives what I think to be a self-assertive display in which it erects the feathers of belly and rump, sleeks down those of head, neck and foreparts generally, holds itself very upright (see sketch) and sways its head and neck slightly from side to side. Once or twice it has shown a very low-intensity version of this to me.

When I first proffered this bird a mealworm I discovered that its " oxpecking " behaviour could be elicited by human fingers. I have visited it many times and always it is desperately eager to perform what



Captive Yellow-billed Oxpecker in self-assertive (?) display.

are, evidently, its natural feeding-behaviour patterns, or at any rate some of them. If given a finger, or the whole hand against the wires of the cage, the oxpecker nibbles rapidly at it with a movement so quick that the mandibles and tongue appear to vibrate as it does so. It nibbles with its bill at right-angles to the skin but also often turns it sideways, nibbling with a scissors-like movement. The tongue appears to be in constant movement and there is a repeated, almost continuous, movement of the throat as if the bird were swallowing, as indeed I think it is. Only a slow-motion film would, however, be able to show exactly what movements are made. The feeling of the bird at work is not at all unpleasant when it is confining its attention to intact skin on hand or head. When working on a cut, however, it can become quite painful.

On many occasions I have laid the side of my head against the cage front to give the oxpecker a choice of feeding biotope, albeit a rather restricted one. In such circumstances the bird nearly always chooses the parts covered with hair (I wear my hair rather short at the sides as a rule) to start with and works on them first although often soon being lured away by my ear. I do not let it work on these for long, however, since it not only tends to treat them very roughly but I cannot *see* what it is doing so that, scientifically, nothing is gained although the very slight pain *does* intensify one's feelings of self-satisfaction at providing the poor creature with an outlet for its instincts !

The impression, that I had from the first, that the bird detached and swallowed tiny loose morsels of skin whilst nibbling the hand was corroborated when I experimented. When I cut little bits of the skin of my finger so that, while still partly attached, they stood up from the surface, the oxpecker nibbled, scissored, and tugged at them till (in a very few seconds) it had detached them, when they were greedily swallowed.

I cut the back of my finger with a razor blade (a friend who was with me and who shall be nameless having, with a deplorable lack of scientific zeal, declined to let me make use of his ear lobe for the experiment) until a little blood came. The oxpecker appeared even more excited by this than it had been by the fragments of loose skin. It consumed the blood with frantic haste and then nibbled avidly at the tiny wound. A few moments later I repeated the experiment (making a fresh incision) with the same result. It was noticeable that whereas only a very little blood oozed from the original wound (I waited for it to appear before offering it to the bird) after the oxpecker had nibbled for some moments the blood welled up more freely and in larger quantity. These observations were repeated an hour or so later. Although slightly painful and clearly effective in inducing freer flow of blood the bird's nibbling at the cut place did not seem to result in any greater injury than the removal of cut bits of skin and, perhaps, some of the skin immediately around the cut. At least careful examination of the finger next day showed no signs of injury attributable to the oxpecker other than a reddening immediately around the cuts. The bill itself had left no marks.

During the course of two protracted sessions as " blood donor " I presented a cut finger to the bird many times and was impressed by the speed with which every vestige of blood was removed and swallowed. Sometimes, but not invariably, the oxpecker initially put its bill sideways against the finger as it started to work with nibbling bill tip and rapidly-moving tongue at the bleeding spot. This appeared to be slightly more efficient, but even when the bird started and continued work with its bill at right-angles to the finger all visible blood was cleared up in a few seconds.

Obviously one must be careful in interpreting the actions of a solitary captive bird such as this. It is deprived of all possibility of seeking its food in the usual manner of its kind and this may account for its readiness to " oxpeck " the human hand or face. The eagerness for blood probably has relevance to ticks or other ectoparasites which, when engorged, burst as soon as the bird's bill nibbles at them, rather than being an indication that it normally gets any blood from large mammals " first hand ". Its behaviour does, however, show that there is an innate recognition of some characteristics (? skin and warmth) of mammalian bodies that are alive and therefore " worth investigating ". Although this bird and the Yellow-billed specimen spend much time climbing about on or clinging to their hessian substitutes I have never seen either of them show any " oxpecking " behaviour when on these dummies. It also suggests fragments of the skin of the host mammals (probably those that are being shed as scurf) and possibly such things as dried sweat *may* play some part in the oxpeckers' diet.

It would be extremely interesting to put this bird in a large aviary

and, when it had become accustomed to its new surroundings, to introduce some suitable large mammal and see if it had an innate recognition of such creatures. If so one could expect an immediate approach, but not if oxpeckers learn which animals to use by following their parents or other adults or by a process of trial and error. Of course, there is the possibility that its being reared by and its continued association with people might, in any case, have so far corrupted its natural good taste that it would now prefer myself, or one of my readers, to a warthog or a wildebeest ; but it would be worthwhile to make the experiment.

* * *

NOTES ON AUSTRAL AND SOUTHERN PACIFIC BIRDS

II.—South Australia

By Jean Delacour (Clères, France)

(*Continued from page 53*)

The vicinity of Adelaide offers to the bird watcher a great variety of species as there are, within easy reach, several distinct kinds of habitats, green wooded hills, large salt and fresh-water marshes and dry mallee (dwarf eucalyptus scrub). It has, moreover, the advantage of being the avicultural centre of the country with numerous bird collections, mostly of native parrakeets and finches, some very rare, which breed regularly. The Adelaide Zoo is well laid out, well kept, and well stocked with a particularly fine collection of Australian birds.

Our readers are familiar with the name of Dr. Alan H. Lendon, an Honorary Fellow of our Society, who probably knows more about Australian parrakeets than anyone else. He has been extremely successful with the rarer and more difficult parrakeets and his excellent articles have often appeared in this magazine. They will also remember that the Avicultural Society of South Australia is affiliated to us.

Dr. Lendon and Mr. R. McKechnie very kindly took charge of us. The country and its birds have little secrets for them—they know exactly where the different species can be found. They were perfect guides ; as they are also outstanding aviculturists, we saw the wild and captive birds of the area under the best possible conditions. I take this opportunity to express my deep gratitude to them and also to others, too numerous to be named, who were kind and helpful during our visit to South Australia.

The close vicinity of Adelaide, the zoo, and some private aviaries were visited during the first two days, while the last two were reserved

for extensive tours of the salt pans, brackish, and fresh-water ponds near the city, the mallee plateau and the lower valley of the Murray River.

Australian zoos are suffering from the complete prohibition to import foreign birds ; they are therefore reduced to the local and New Zealand avifauna (New Guinea birds are not allowed in and ungulate mammals are also barred). There are still a few exotic species in aviaries brought in before prohibition or locally bred, mostly doves, parrakeets, finches, pheasants, quails, and waterfowl. For the visitors from abroad, however, native birds are of greater interest, and the Adelaide Zoo offers an excellent series of them. The collection of parrakeets and cockatoos is particularly good, housed in highly suitable aviaries, where a number of them breed every year. Practically all native species are represented, as well as Keas and both Yellow-fronted and Red-fronted Parrakeets from New Zealand ; Blue-faced Mealy Rosellas and Cloncurry Barnard's are particularly attractive and seldom seen elsewhere. It can be stated here that most Australian parrakeets are still common in the wild state. The species which are rare or very local are ; Brown's, Queen Alexandra, Golden-shouldered, Scarlet-chested (Splendid), Turquoisine, Bourke's, Orange-breasted (*N. chrysogaster*), and Swamp (*Pezophorus wallicus*). The Night Parrot is very rare, and the Paradise Parrakeet may be extinct ; all cockatoos are numerous, except perhaps Gang-gangs and Leadbeater's.

Noticeable for a visitor from abroad were three species of Button Quail (*Turnix melanogaster*, *velox*, *varia*), the native Quails, Bustards, Mallee Fowl and Brush Turkeys, and the Musk Duck ; certain doves : Brown Pheasant-tailed, Red-plumed (*Lophophaps ferruginea*), and Flock Pigeons (very Sandgrouse-like) ; there are also several very striking pure white Crested Pigeons (*Ocyphaps lophotes*). Two female Lyrebirds, a Noisy Pitta ; many species of honey-eaters, and finches ; Ibis, Spoonbills, Plovers, Herons, Frogmouths, Kingfishers (Kookaburra and Sacred), Butcher Birds, Piping Crows, Bower Birds, Regent's Birds, Cat-Birds, and Wood Swallows completed this excellent presentation of the native avifauna.

There is also a good mammal collection, with breeding herds of many species of kangaroos and wallabies, some now very scarce. The installations are altogether practical and pleasing and it is evident that the Adelaide Zoo is managed by enthusiastic and experienced men. M. F. Basse, the President, and the members of the Council are to be congratulated. The Director, Mr. V. D. Haggard, has retired since my visit.

A number of private collections are also very interesting. Dr. Lendon has now reduced his collection to a few very rare parrakeets, particularly the Golden-shouldered. But Mr. C. C. Burfield has a large and interesting one, not only of parrakeets but also of doves,

waterfowl, passerines, and other birds. He breeds a remarkable colour mutation of the Scarlet-chested, or Splendid Parrakeet in which the blue of the face invades other parts of the plumage. The aviaries of Mr. Robert Wright and Mr. J. Jolly are also well built, well kept, and agreeably surrounded by plants and flowers. One night we had a well attended and interesting avicultural meeting when I had the pleasure to meet many local aviculturists and bird students.

We found some very nice birds in the city of Adelaide. Mudlarks and native Magpies (*Grallina* and *Gymnorhina*) are everywhere, as in all Australian towns, and two species of Lorrikeets (Swainson's and Purple-crowned) were feeding in the small, pink-flowered eucalyptus trees lining a street.

In the wooded hills of the suburbs, numerous birds can be observed, including Adelaide and Port Lincoln Parrakeets (also known as Bauer's) ; but I cannot attempt, of course, to list here all the species seen, and I will only mention the most striking ones, or those of special interest to aviculturists.

A little further away lies a large flat area consisting of many salt-water pans, surrounded by scrub and, between them and the sea, a shallow fresh-water lake. It is a bird sanctuary ; waterfowl are abundant, some preferring one habitat, while others are partial to the other. Black Swans lived on both, but were more numerous and breeding on the second. There were many Black Ducks and Grey Teal, and also a number of Chestnut, which kept more to the mangroves and reed-beds ; Australian Shovelers, Pink-eared Ducks, and White-eyes were common, and there were Blue-bills (*Oxyura*) and Musk Ducks. The two species of Stilts were abundant, the White-headed one (with black nape and hind-neck), much like the American, and the very pretty Banded (*Cladorhynchus leucocephalus*), with white neck, back, and belly, dark wings, and a broad chestnut band on the breast ; these were swimming about, picking food from the water, much as Phalaropes do. The Australian Avocet is probably the prettiest of all, with its chestnut head and neck. Two species of Grebes, Terns, and many Dotterel, Sandpipers, and Stints were there ; also Spur-winged (Yellow-wattled), and Banded Plovers, two birds which live and breed well in aviaries. We saw several little flocks of Blue-winged Parrakeets on the low bushes along the road, and here and there the tiny and lovely Blue and White Wrens. The larger rails were in evidence in the marsh : Blue Porphyrios, Dusky Moorhens (larger and darker than the European), and Native Hen (*Tribonyx ventralis*). Coots abound, the same as in Europe and Asia. Galahs were numerous as always, and we saw a few Brush Bronze-wings near the coast.

We drove across the attractive, wooded, and cultivated hills to the dry mallee plateau, and it was a completely different country. The slender, crooked eucalyptus, with scattered bushy undergrowth, stretch

far and wide. The mallee in fact covers most of the dry interior of Australia. It is interspersed here and there by cultivated fields. Despite its parched aspect, it has a rich bird life—we found three nests of the Tawny Frogmouths, so tame that they would leave the nest only when touched. Barnard's, Blue-bonnet, Many-coloured, and Red-rumped Parrakeets were common and nesting ; Diamond Sparrows and Zebra-finches, Mistletoe Birds (*Dicoeum*), Crested Bell-birds (*Oreoica*), Thornbills (*Acanthiza*), and White-faced Chats (*Epthianura albifrons*) were conspicuous. This is also the habitat of the Common Bronze-winged Pigeon. There were also many interesting small birds. We found the nest of the Mallee Fowl, but could see none of the birds. We finally reached the lower valley of the Murray River, the largest permanent water course of the continent. We saw our first Peaceful Doves along it. At one spot, in the grass and willows, there is an established colony of the South African Grenadier Weavers. We saw Common Blue and Purple-backed Wrens here and there. But it is in the large swamps, beyond the river, that our finest display of water-birds came into view ; Black Swans with cygnets ; Musk Ducks, some huge males going through their prolonged and extraordinary display ; all sorts of rails and ducks ; two species of Ibises (White and Straw-necked), two of Spoonbills (Royal, Yellow-billed). We never tired of watching them.

I am afraid these notes give a very inadequate impression of this most interesting country, but it would take a whole volume to enumerate all the thrilling sights which it was our privilege to enjoy. Bird lovers visiting Australia must see Adelaide and its neighbourhood.

(*To be continued*)

* * *

BREEDING OF YELLOW-WINGED SUGAR BIRD

By JOHN GARRATT (Rustington, Sussex)

In 1962 my pair of Yellow-winged Sugar Birds (*Cyanerpes cyaneus*) nested and raised two sturdy young chicks in my winter garden.

After building her nest of dried grasses, cow hair, and feathers, the hen laid two small white eggs speckled with red on 15th and 16th July. These hatched on 26th and 27th July and the young left the nest on 9th August.

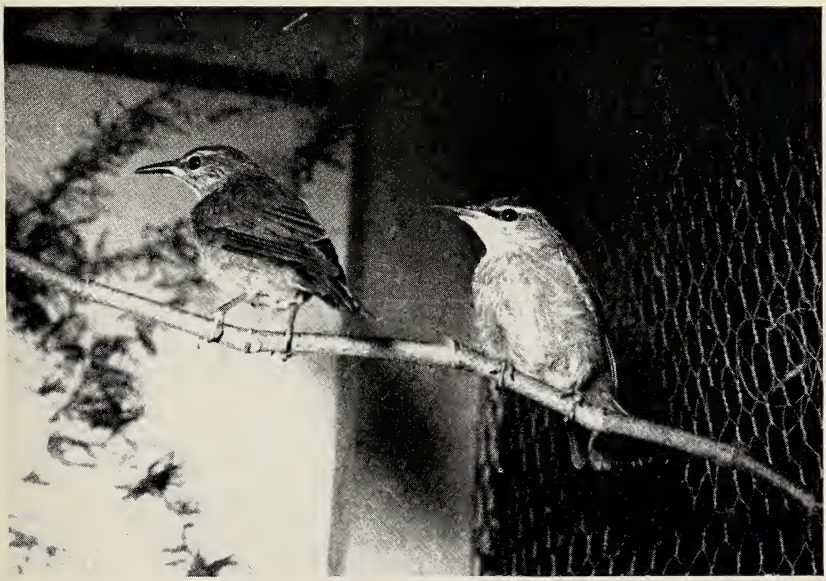
The young birds had to be fed on live food so the hen was supplied with mealworms, live ants' eggs and small spiders, also hundreds of fruit flies (*Drysophila repleta*). In the corner of my orchid house I have a fabulous fly farm where large supplies of fruit flies are bred, rather to the disgust and annoyance of my long-suffering wife.

The young birds were separated from their parents at the beginning of September, fed well on their own and appeared remarkably fit.



Copyright] [*James Clevett*

Young Yellow-Winged Sugar Bird, near Nest. Four Weeks Old.



Copyright] [*James Clevett*

Two Young Yellow-Winged Sugar Birds. Four Weeks Old.

[*To face p.* 120

RECORDING THE VOICES OF CAPTIVE BIRDS

By Jeffery Boswall

(B.B.C. Natural History Unit, Bristol, England)

Introduction

People have been recording the sounds produced by birds for almost as long as it has been possible to record sounds of any sort. To date about 2,300 of the world's 8,600 known species of birds have been recorded during the last three-quarters of a century.

In Europe, 313 species out of the 419 known to nest west of the Urals (Voous, 1961) had been recorded in Europe, to my knowledge, by mid-1962. For the British Isles, of the 244 species which can be seen annually (Peterson *et al.*, 1956, plus the Parrot Crossbill (*Loxia pityopsittacus*) and Collared Dove (*Streptopelia decaocto*)), 201 had been recorded by the end of 1962.

Remarkably enough, the vast majority of them are of wild birds. It is the purpose of this essay to outline the early history of recording the voices of captive birds, and to draw attention to the splendid opportunities which aviculturists have for this work.

Early History

The earliest recording extant of any bird is on a wax cylinder in the possession of Ludwig Koch—the " Master of Nature's Music ". It was made in Frankfurt in 1889 with an Edison phonograph (Koch, 1955). The bird was a Common Shama (*Copsychus malabarica*) and its voice is preserved in the B.B.C.'s Sound Archive, along with almost all Dr. Koch's other recordings.

The earliest mention in scientific literature of the reproduction of bird song also refers to a cage bird. The account of the 16th Congress of the American Ornithologists' Union, held in 1898 (Anon, 1899), mentions the playing of a " graphophone demonstration of a Brown Thrasher's song " by Dr. Sylvester D. Judd of Washington, D.C.

A world discography (Boswall, 1961*a* and 1962) shows that about 160 individual gramophone records, or albums of records, have been commercially issued since 1908. The earliest one of all gave the voice of a captive nightingale (*Luscinia megarhynchos*) in the Carl Reich aviary in Berlin. It is worth quoting in full the entry in the H.M.V. Catalogue for 1908–10 about this historic disc :—

> " Unique Bird Record. G.C. 9439. Made by a Captive Nightingale. For the first time in the history of the Talking Machine industry, a genuine record has been obtained of a bird. The Nightingale in question is the property of Herr Carl Reich, of Berlin, and was taken from its nest shortly after hatching, and reared by hand. The bird, therefore, can be said to have been

hatched in captivity, and consequently bird lovers can put out of their minds all thoughts of a wild bird being confined in a cage. This particular bird is a famous songster, and is taken about through Germany by its proud possessor for show purposes. There was no difficulty in obtaining the record. The cage was suspended in front of the horn, and as soon as the recording motor was set in motion, the bird began singing and did not even stop when it should, as will be seen by the last note of the record, which clearly shows the bird went on singing after the instrument stopped recording. As this is the first record of its kind, no one interested in the Gramophone should be without it."

Unfortunately, we are *all* without it, as no copy exists so far as I can discover.

Gramophone Records

Altogether I have a note of twenty-three gramophone records devoted either entirely or chiefly to the voices of captive birds. The recordings for eleven of them were made in Britain, for seven in Germany, for three in France, and for two in the U.S.A. In the following discography, they are arranged chronologically by year of issue, under national headings. I would be particularly glad to hear from any member of the Avicultural Society of any additional references :—

Britain

Anon (*c.* 1928). "Canary Bird Song." One 10-inch, 78 r.p.m. disc, no. PO.5003. Decca, London.
"Made by captive singers of F. Blanck's breed ; cocks and hens bred 1928." (These recordings *may* not have been made in Britain.)

Huxley, J. S. (1935). "Zoo Voices." Six 5-inch, 78 r.p.m. discs. Sound Distributors, London.
These include thirteen avian voices from Regent's Park and Whipsnade Zoos.

Huxley, J. S., and Koch, L. (1938). "Animal Language." Two 10-inch, 78 r.p.m. discs, nos. 103 and 104, accompanying book, 62 pp. Country Life, London.
Seven African bird species.

Anon (1952). "Joey the Budgie." One 10-inch, 78 r.p.m. disc, no. QPS 1. Queensway, London.
Two sides of the usual random chatter by a reasonably good mimicking Budgerigar (*Melopsittacus undulatus*).

Anon (1955). "Joey the Chatterbox." One 10-inch, 78 r.p.m. disc, no. F.10662. Decca, London.
Two sides of almost unintelligible talk ; clearly not the same Joey as above.

ANON (*c.* 1955). " ' Beauty Metcalfe ' and ' Sandy Paul '—Talking Budgerigars." One 10-inch, 78 r.p.m. disc, no. F.10297. Decca, London.

WILLIAMS, M. (1958). " Sparkie Williams." One 7-inch, 45 r.p.m. disc, no. 4475. Parlophone, London.
A popular disc giving incredibly clear " speech " by a Budgerigar.

WILLIAMS, M. (1962). " Pretty Talk." One 7-inch, 45 r.p.m. disc. Caperns, London.
Mainly human speech, for a Budgerigar to copy, but also some actual examples. This disc sold over 20,000 copies.

DUDDRIDGE, PETER (1962). " Wildfowl Calling." One 7-inch, 45 r.p.m. disc, no. 7 EG8764. H.M.V., London.
Eighteen *Anatids* recorded at the Wildfowl Trust collection, Slimbridge.

DUDDRIDGE, PETER (1962). " Voices of Birdland." One 7-inch, 45 r.p.m. disc, no. D.M.P. 101. Midwinter Recording. Cheltenham, England.
Nineteen species recorded in Leonard Hill's attractive bird garden at Bourton-on-the-Water.

GERMANY

REICH, CARL (1908). " Unique Bird Record : made by a Captive Nightingale." One 10-inch, 78 r.p.m. disc, no. GC 9439. H.M.V., London.
Referred to earlier under " Early History ".

REICH, CARL (*c.* 1927). " Actual Record of Captive Nightingales." One 10-inch, 78 r.p.m. disc, no. B. 390. H.M.V., London.
Two birds in song.

ANON (*c.* 1927). " Nightingale, Blackcap, Garden Warbler " and " Canaries ". One 10-inch, 78 r.p.m. disc, no. E.G.576. H.M.V., London.
Captive birds, probably in Carl Reich's aviary.

ANON (1928). " Canaries at International Championship, 1928." One 10-inch, 78 r.p.m. disc, no. O-11956. Odeon, Germany.

REICH, CARL (1929). " Canaries in Song." One 10-inch, 78 r.p.m. disc, no. B 2947. H.M.V., London.
Two birds on one side, three on the other.

ANON (1934). " Canary Song. German Championship, 1934." One 10-inch disc, no. 10200. Polydor, Germany.

ANON (*c.* 1937). " Canary Song." One 10-inch, 78 r.p.m. disc, no. 21333. Grammophon, Germany.

FRANCE

ANON (1948). " Oiseaux." One 7-inch, 45 r.p.m. disc, no. 7 EMF 106. Pathé-Marconi, Paris.

Band 3 of side 1 was recorded in a Budgerigar aviary, and band 4 of side 2 is a single kind of that species. On side 2, band 1, the listener can hear an African Grey Parrot (*Psittacus erithacus*) saying " Bonjour Coco ! ".

ROCHE, J. C. (*c.* 1959). " Chants des Canaries." One 7-inch, 45 r.p.m. disc, no. 91.375. B-Med. Pacific, Paris.
Examples of various song passages which trained canaries (*Serinus canaria*) sing. Two breeds are represented : the " Hartz Mountain " and the " Paris Nightingale ".

ALBOUSE, G. (1960). " Le Canari du Hartz." One 7-inch, 33·3 r.p.m. disc, no. LDY 5002. " Le Chante du Monde," Paris.

THE U.S.A.

COLLIAS, N., and GREENHALL, A. M. (1954). " Sounds of Animals." One 12-inch, 33·3 r.p.m. disc, no. FPX 126. Folkways, New York.
This important disc includes much of the vocabulary of the Domestic Fowl (*Gallus gallus*) illustrating in sound the fascinating paper by Collias and Joos (1953). The voice of the Rhea (*Rhea americana*) recorded at Detroit Zoological Park can also be heard.

ANON (*c.* 1960). " Parakeet Training Record." One 7-inch, 45 r.p.m. disc, no. UB-52-469A. Hartz Mountain Products Co., New York.
A lady's voice (American accent) repeating phrases for a Budgerigar to learn and some brief mimicry from a bird.

Of these twenty-three records, eight are of talking birds, mostly Budgerigars (*Melopsittacus undulatus*), and a further seven are of domestic Canaries (*Serinus canaria*). Three present the songs of European Oscines recorded in Germany, and two vocalizations by birds in the collections of the Zoological Society of London. The unrivalled waterfowl collection of the Wildfowl Trust provided Peter Duddridge with the opportunity for his first disc, and for his second he went to the " Birdland " aviaries at Bourton-on-the-Water in Gloucestershire. Finally, Collias gives us a most interesting scientific excursion into the vocabulary of the domestic farmyard chicken (*Gallus gallus*). Garstang (1923, p. 37) mentions a captive Song Thrush (*Turdus ericetorum*), an H.M.V. disc, B 392, but gives no further details.

Gramophone records devoted primarily to recordings of wild birds sometimes include reproductions of the voices of aviary specimens. Among the Palearctic discs we find a number of examples. Palmér (1958–62) includes among the 199 species in his magnificent Swedish set a " conversation " between a pair of captive Snowy Owls (*Nyctea scandiaca*). North and Simms (1958) include in *Witherby's Sound-Guide to British Birds* calls of four species of goose recorded in confinement. In the " Ils chantent pour vous " series, disc I include the voice of the Orange Canary, i.e. a hybrid between a cock Red-hooded Siskin

(*Carduelis cucullata*) and hen Canary (*Serinus canaria*) (Albouze, 1956) ; and disc IV gives the song of the White-rumped Seed-eater (*Serinus leucopygius*) (Albouze, *c.* 1959).

Unpublished Recordings from Zoos and Aviaries

It is far beyond the scope of this contribution to attempt a review of work done in the general field of bio-acoustics on birds brought into captivity for the purpose.

Striking work has been done in this country, for example by W. H. Thorpe, and others, at the Madingley Ornithological Research Station at Cambridge. Dr. Thorpe tells me that during some twelve years research into vocal communication and expression in birds, recordings have been made of " All British finches (including buntings and many hybrids), and many exotic finches, buntings and doves, and hybrids of those in captivity ".

This work has resulted in a series of important papers (e.g. Thorpe, 1958, and Marler, 1956) and a stimulating monograph, *Bird-Song* (Thorpe, 1961). Other outstanding studies are those of Gompertz (1961) on the Great Tit (*Parus major*) and Hall (1962) on the Estrildines.

From a world review of avian bio-acoustic work in 1960 and 1961 (Lanyon, 1962) it is evident that birds in confinement are not infrequently the objects of experimental acoustic study. He quotes, for example, Blase's (1960) work on Red-backed Shrikes (*Lanius collurio*) reared in soundproof rooms : Thielke's comparison of songs of European Tree Creepers (*Certhia brachyolactyla* and *familiaris*) hand-reared in Germany, and so on. There are, of course, many more examples of this kind of work in progress in Europe and elsewhere, but in this paper I want to stress rather the importance of the opportunities provided by birds which are already in confinement, particularly in Britain. The best example is that of the work done at the Wildfowl Trust at Slimbridge. By 1960 the voices of twenty-seven forms of Anaditidae of twenty-five species (Boswall, 1961*b*) had been recorded there by Ludwig Koch and Eric Simms and incorporated in the B.B.C.'s library of natural history recordings (Anon, 1961). Some of Peter Duddridge's Slimbridge recordings of about eighty species have since been added to the B.B.C. collection, and a selection of eighteen species from his library were used for the disc earlier mentioned. Early in 1962 two Research Associates of Cornell University's Laboratory of Ornithology—Col. Donald S. and Mrs. Marian P. McChesney—recorded the voices of at least eighty waterfowl species in the Trust's grounds (Kellogg, 1962). For an up-to-date list of species and forms recorded at Slimbridge, see Boswall (in press, *c*).

Although nineteen zoos qualify for inclusion under the headings of " Great Britain " in the *International Zoo Yearbook* list of " Zoos and

Acquaria of the World" (Jarvis and Morris, 1960), recording work on any scale has been done only in Regent's Park and Whipsnade, so far as I am aware. Zoos are particularly important sources of new material since so many of their birds are from regions where little recording work has been done on wild species. In the Oriental region in particular the taping of birds has been no more than fragmentary, probably only a dozen species having been recorded. In the Ethiopian region the total recorded is little more than three hundred, and in the Antarctic (with an admittedly not very rich avifauna) probably only about thirty species. My main source of information on work done in the collection of the Zoological Society of London is the B.B.C.'s catalogue of natural history recordings (Anon, 1961), which shows that Ludwig Koch, Eric Simms, and an occasional B.B.C. engineer have between them recorded twenty-two non-European species. Of these, fifteen were from Africa south of the Sahara—including the Knysna Turaco (*Tauraco corythaix*) ; two from the Indian sub-continent—the Indian Hill Mynah (*Eulabes religiosa*) and Common Peafowl (*Parvo cristatus*) ; two from *the* bird continent, South America—the Brazilian Caracara (*Polyborus tharus*) and the Brazilian Cariama (*Cariama cristata*) ; the Emu (*Dromais novae-hollandiae*) from Australia ; two Antarctic Penguins (*Pygoscelis antarctica* and *P. papua*), and lastly, two eastern Palearctic birds.

I myself have recorded the chittering call of the Burrowing Owl (*Speatyto cunicularia*) at the Jersey Zoological Park.

Turning to other collections in this country, Peter Duddridge tells me that he has taped thirty species at Mr. Leonard Hill's delightful bird garden at Bourton-on-the-Water in Gloucestershire (some of which appear on the disc mentioned earlier) and about ten at the Charlecote Bird Garden.

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* * *

UNUSUAL BEHAVIOUR OF YOUNG GOULDIAN FINCHES

By S. Shapiro (Johannesburg, South Africa)

I have the following observation to report on what I consider to be the peculiar behaviour of young Gouldian Finches.

I bred Gouldians on a community basis, i.e. six pairs of Gouldians in an outside aviary 6 by 15 by 7 feet high, no other birds but Chinese Painted Quail being present. The particular nest of birds of which I speak was the first of the season and the three youngsters left the nest on 9th March, 1963. On the 21st March, 1963, the young were still being fed by the parents.

Thereafter two became independent but the third remained immature and kept up an incessant chirping for attention. This immature bird, which I shall call A, did not look well and was not strong on the wing. I was easily able to catch it by hand and ring it. The other two youngsters which I shall call B and C were perfect in every respect. Up to 24th March, 1963, A was still being fed by the parents. Between 18th and 26th March, 1963, A was seen to be fed by B and C (i.e. its own nest mates) on numerous occasions.

The feedings were not just token feedings but were accompanied by

the usual wing fluttering displays, and regurgitated food was seen to pass from one bird to another. On one occasion while A was being fed by B, C was seen to enter another nest of Gouldian nestlings and from the characteristic noise was feeding these. On 27th March, 1963 A was still being fed by its nest mates but was making attempts to feed itself. This bird unfortunately died on the 28th March.

* * *

OBITUARY

JOHN SPEDAN LEWIS

1885–1963

One more of my old and dear friends has left us—taking with him more of my fond memories. We had long been closely associated in the pursuit of our common interests, particularly birdkeeping and gardening. John Spedan Lewis, a Vice-President of the Society since 1938, died on 21st February, 1963, at Longstock, Stockbridge, in the cottage he had built three years ago to enjoy peace and comfort in the company of his devoted secretary and housekeeper. It is a great relief to hear that he passed away suddenly and quietly soon after he had gone to bed, after a day of normal activities. He was seventy-seven years old.

He had a very full life. We can only mention here the tremendous work he has done in expanding very successfully the large business he inherited from his father, and more so in turning it into a partnership, thus presenting his employees with the large fortune he could have kept. Spedan Lewis's unselfishness and idealistic generosity have few, if any, equals in the world to-day. His other line of interest was the study of nature, which he started as a child. An avid reader, he learned a great deal—his knowledge of the native plant and animal life of England was remarkable. He was also a keen gardener, and he carried on with these hobbies until his last day.

Spedan Lewis joined the Avicultural Society in 1924 and I met him at the Zoo the following year. He was then living at Hampstead, where he had built some excellent aviaries, with large heated shelters for rare passerine birds, particularly Birds of Paradise, and a few others. He also had a fine collection of wild cats in outdoor cages. He soon took great interest in owls and gathered a large collection of them, which were housed at Wargrave and cared for by Miss Ethel Chawner, a learned and enthusiastic naturalist, and long a specialist of these birds.

He became a member of the Council in 1927. When he left his house at Hampstead, he built a series of aviaries at Odney (Cookham), a park used as a country club by the John Lewis Partnership. He acquired many more birds, including pheasants, a large number of

them brought over by Messrs. Frost, Webb, Shaw-Mayer, and Cordier, sharing these collections with Ezra, Whitley, and me.

Spedan Lewis moved to Leckford, Stockbridge, Hampshire, in 1933, and Miss Chawner followed him. Great developments soon took place. With my advice, many very spacious pens for pheasants were erected up on the hill, and they were as good as any I have ever seen ; also a large duckery was established in the valley on fast-running chalk streams and ponds, in a perfect location. There were furthermore, roomy pens for swans, geese, and cranes. Excellent collections of all these birds were gathered, many of them bred at Clères. Numerous indoor and outdoor aviaries for parrots, doves and small birds, and enclosures for Rheas and park animals completed the installation.

Spedan and I had great fun planning this accommodation. We had become close friends through the years and saw a lot of each other in England and in France. He was also a benefactor of the London Zoo, presenting many rare species, and of the British Museum, several expeditions being sponsored by him.

A livestock department had been opened at Peter Jones, one of the London stores of the Partnership, in 1938. It was soon closed down, but a fortunate result was that Mr. Terry Jones, who had been engaged to work in it, was then sent to Leckford. Until then Miss Chawner had supervised the collections with the help of Mr. H. Milligan, who had acquired a great deal of experience at Elbeuf, caring for the birds of Madame E. Lecallier, and later at Clères. Terry Jones joined them, and when Miss Chawner, a great friend to him, was obliged to curtail her activities, he assumed full responsibility for the collection. Everyone knows what a success he has made of it, particularly of waterfowl breeding. The Leckford collection was at its height in 1939 when war was declared. Mr. Jones joined the Navy. It became more and more difficult during the following years to feed and care for the birds. Many were disposed of, particularly the cranes, but a good many species of waterfowl and pheasants were preserved. It was lucky, as European and even American collections were replenished after the war from that valuable nucleus. Mr. Lewis most kindly presented many specimens to me to restock Clères in 1946. Waterfowl still are reared there to-day on an economic basis.

Spedan Lewis's interest in his captive birds gradually diminished during the last ten years. His devoted wife had died in 1953, a terrible blow, and his health began to decline. A very serious illness of his early years had always obliged him to take precautions, and these became more urgent. He however was still a lover of plants and nature in general. I visited him a few times each year and we had the same long talks and discussions as we had in earlier days. I shall miss them deeply, as also his true friendship and affection.

J. Delacour.

LONDON ZOO NOTES

By J. J. Yealland

A Bittern found in a Cornish town during January, 1962, and deposited here by the R.S.P.C.A. has now been sent to Minsmere reserve where the Royal Society for the Protection of Birds is trying to rehabilitate specimens collected from various places. During the severe weather most of the Bitterns scattered and must have suffered heavy mortality.

A male Eider Duck (ringed in Denmark), a female Scoter, a Gannet, and a Common Gull (ringed at Heligoland) were picked up in different parts of Kent and Essex and sent here.

Other arrivals include a pair of Cereopsis Geese, eight Japanese Quail, two Blue-headed Parrots (*Pionus menstruus*), a Hoopoe, a Meadow Pipit, a Virginian Cardinal, a Mistle Thrush, four Gouldian Finches, two Siskins, and four Alpine Choughs.

A pair of Baikal Teal and an Eastern White-breasted Waterhen have been sent from Hong Kong by Dr. K. C. Searle.

A Black-footed Penguin and a Crested Pigeon have been bred in the gardens.

The Japanese Quail is not recorded as having been in the collection at any earlier date, but this seems unlikely, for it has long been domesticated in parts of eastern Asia and for several years in this country, being kept for the large number of eggs that it lays, and reared for the table. Like the nominate race which is a summer visitor to this country and to other parts of Europe and to western Asia, *Coturnix c. japonica* is migratory in at least part of its range, breeding as far northward as Sahkalin and parts of Japan and wintering as far southward as Siam and Indo-China. Other races are resident in the Azores, Madeira, Canary Islands, Cape Verde Islands, and parts of Africa and Madagascar, Comoro Islands, and Mauritius. In eastern China where this quail used to occur in large numbers on migration, many were netted, shot, or caught with hawks. The males were also used for fighting contests. Père David stated that the birds were " bathed in hot tea and dried inside their owners' sleeves and then fed. After the process has been repeated several times the birds become very tame ". It was said that the contestants were put upon a railed table and millet thrown there, " and as soon as one picks up a grain, the fight begins."

* * *

NEWS AND VIEWS

Miss Geraldine Russell Allen has been elected Chairman, The North of England Zoological Society, in succession to the late Mr. G. B. Groundsell.

* * *

Major A. N. Weinman, formerly Director, The Zoological Gardens of Ceylon, is now Director of the National Zoo, at Kuala Lumpur, Malaya.

* * *

The Royal Horticultural Society has awarded the Victoria Medal of Honour to Norman G. Hadden. The last member to receive this high distinction was the late Dr. Maurice Amsler.

* * *

Dr. J. Steinbacher kindly informs me that the Citril Finch *Spinus citrinellus* has been bred in Germany by Karl Sabel.

This may well be a first success anywhere. It is possible that W. E. Teschemaker was successful in Devonshire, in 1913, but he did not publish any details of the event.

* * *

The Bronze Medal of the Avicultural Society of South Australia has been awarded to R. W. McKechnie, for breeding the Black-faced Wood-Swallow *Artamus cinereus*.

McKechnie has previously bred the Dusky *A. cyanopterus*, the Masked *A. personatus* and the White-browed *A. superciliosus*, so that he has now bred four of the six species comprising the genus *Artamus*.

* * *

Kenneth Russell sends further news of his Sierra Parrakeets (see 1962, 213). He writes : " I regret that ultimately the breeding wasn't a complete success—the three youngsters perished, due to the rain penetrating the nest-box, which was not a very suitable one for this species. I have wintered them indoors (unheated) and they do not appear to have been particularly affected by the cold. They are really charming little birds, seemingly quite inoffensive, sharing a flight with Queen Whydahs and a Red-headed Finch. All my parrakeets outdoors have so far come through this bitter weather quite well. A pair of Alexandrines decided to nest with resultant egg-binding. The hen survived, however, so I am hoping that they may resume domestic pursuits in more seasonable weather later on."

* * *

Lismara breeding results, 1962. Seventy-one parrakeets were reared : four Ring-necked (parents blue ♂ and green ♀) ; four Ring-necked (parents blue ♂ and lutino ♀) ; two lutino Ring-necked ; two Plum-headed (the male parent is a yellow bought from the late Duke of Bedford, and must now be a great age) ; five Rock Pebblers ; two Barraband's ; fourteen Yellow-rumped ; five Pennant's ; four Barnard's ; three Red-rumped ; two Stanleys ; four Red Rosellas ; one

Splendid ; five Elegants ; four Blue-winged ; eight Nyasa Lovebirds ; and two Roseate Cockatoos.

One hundred and twenty waterfowl were reared : Carolina ; Marble, Common and Cinnamon Teal ; Chiloe, American and Common Wigeon ; Common Shoveler ; Eider Duck ; and Barnacle Goose.

* * *

A. W. E. Fletcher points out that there appears to be a difference of opinion concerning the number of eggs laid by the Picazuro Pigeon *Columba picazuro*. Dr. A. G. Butler, *Foreign Birds for Cage and Aviary*, II, page 255, writes : " Gibson says . . . that in six nests which he examined each contained only one egg ; Hudson, on the other hand, declares that two are deposited, which is what one would expect in the case of a *Columba*."

Fletcher is able to offer some confirmatory evidence that in captivity, at least, the clutch size is one egg only. Last year the pair at Chester Zoo nested three times, and so far this year once. On each of the four occasions a single egg was laid.

* * *

Jack Hartley, of Clearview, South Australia, has enjoyed remarkable success in breeding Peach-faced Lovebirds. During the past two and a half years he has bred over 130 young ones.

Apart from the prolificness of his original two pairs and their progeny the results are the more remarkable in that he has had the seeming temerity to breed on the colony system !

The aviary is 10 feet long, 7 feet high and 6 feet wide. The maximum number of breeding pairs in the aviary has been eight, and the maximum number of all ages at any one time sixty-four. Hartley stresses the importance of having plenty of boxes and logs always available, also two or three sheaves of hay on the floor of the flight. The aviary also contains a pair of Black-breasted Quail, which help to turn over the earth floor.

* * *

Mention in *Australian Aviculture* that Norman McCance, of Avonsleigh, Victoria, has an Amherst Pheasant cock twenty-one years old prompted an inquiry regarding this bird. Mr. McCance kindly sent me details of its origin. Many years ago the late Mr. Alan Jacques, of Balwyn, Victoria, imported some pure-bred stock from the late George Beever, of Huddersfield. In October, 1941, he gave a setting of eggs to McCance and it was from this that " Methuselah " eventuated. He fathered quite a number of youngsters which were sent to friends in New South Wales, where the progeny have won many prizes at the Sydney Royal Show, and last year at the International World Poultry Congress Show won the Silver Rose Bowl Trophy for the Grand Champion Pheasant of the Show.

Mr. McCance writes : " By the way, old Jacques who was a Wiltshire man was as famous for longevity in his pheasants as I am now. I saw a Reeves' cock hobbling around at his place and commented on its age. Jacques said ' Yes, he's pre-war ! ' This was in 1940–41. I replied that that was nothing remarkable. Jacques said ' I mean pre-last war ! ' He had imported that bird in 1913 and it was twenty-seven years old.

All our rare pheasants are generally very long-lived. I got the original pair of Edwards in December, 1936, from Genoa (in exchange for twenty-seven Wallabies, two Wombats and two Sugar-squirrels), and the cock bird lived for seventeen years. My Fireback (Siamese) died last winter aged fifteen ; and my present Edwards pair total twenty-two years, and had one fertile egg last November.

The amazing feature of ' Methuselah ' is his virility. He was displaying yesterday to his mate and as he is just through his moult he gave a dazzling performance. He gets regular doses (in ' parts per million ') of salt, iron, magnesium and manganese, and his colouring is superb. Sorry to boast so much about him. People come from N.S.W. and drool over him. All I reared of Amhersts this season, 1962–63, was a trio of his grandchildren."

* * *

The foregoing causes one to speculate on the longevity of pheasants. Accessible records appear to be somewhat meagre. J. H. Gurney, " On the Comparative Ages to which Birds live " (*Ibis*, 1899, pages 19–42) gives only two examples : Silver Pheasant ♂, 21 years old, Authority, " Birds of Ireland," p. 27.

Temminck's Tragopan ♂, 14 years old. Authority, F. E. Blaauw.

It would be of interest if members would report any cases of longevity of which they have knowledge. A.A.P.

* * *

REVIEWS

A GUIDE TO THE BIRDS OF SUSSEX. By G. des Forges and D. D. Harber. Oliver and Boyd, Ltd., Edinburgh, 1963. Price 30*s*. net.

This concise and clear guide provides a summary of the information on the distribution and occurrences of birds in Sussex. The validity of records has been submitted to critical examination and all those which were not considered perfectly sound have not been included. A description of the topography and ecology of the county is followed by notes on individual species giving, as far as appropriate, details of status, breeding information, numbers, where in the county the species occurs, and migrations. There is a specially drawn outline map, ¼ inch to the mile, showing woodland, principal urban areas, heights and contours, and twelve excellent photographs illustrate varying bird habitats. P. B.-S.

NOTES

Escapes from London Airport

Since 1954 I have spent a great deal of time at London Airport, waiting for, and meeting, aircraft at all hours of the day and night, and I hope these notes on bird escapes from aircraft and vehicles will prove of interest to fellow aviculturists. The list of species only includes those birds seen in the actual airport area, the boundary taken being the perimeter road. The majority of escapes are from Indian shipments, this can be attributed to the cane-type hessian covered cages which are very easily damaged during loading and offloading ; one loose cane-slat pushed out or broken and the damage is done.

Owing to the large numbers shipped and their small size the Red Avadavat, (*Amandava amandava*) is the Indian species that most often escapes. Many of them are recaptured by the loading staff who, although not experienced, are well aware that the chances of survival for such tiny unacclimatised birds are very remote. Other commonly imported African and Asiatic species I have seen escape or have noted in the airport area include Java Sparrow (*Padda oryzivora*), Tri-coloured Mannikin (*Munia malacca*), Spice bird (*Munia punctulata*), Silverbills (*Euodice malabarica* and *E. cantans*), Bronze-winged Mannikin (*Spermestes cucullatus*), Cut-throat (*Amadina fasciata*), Grey Singing Finch (*Poliospiza leucopygia*), Pintailed Whydah (*Vidua macroura*), Red-eared Waxbill (*Estrilda troglodytes*), and various weavers.

On a few occasions I have seen Shamas (*Kittagingla macroura*), Pekin robins (*Leiothrix lutea*), Common Mynahs (*Acridotheres tristis*), Zosterops, various Bulbuls, and, once only, a Red-crested Cardinal (*Paroaria cucullata*). There is little likelihood of survival for most of these birds although, of course, the season and weather conditions would have a bearing.

The airport and surrounding country is frequented by large numbers of gulls. Carrion Crows and Magpies breed in the area, which is also popular with boys and youths armed with air-rifles, and sometimes more formidable weapons. Unfortunately I have no time for regular bird watching, but I have often wondered if any of the more hardy and wily species have managed to elude these hazards. It would be interesting to know if anyone living in the vicinity has any evidence of survival.

J. Trollope.

Wattled Crane in N'gamiland

In the north-west corner of the Bechuanaland Protecterate lies N'gamiland, a large inland delta, surrounded by hundreds of square miles of semi-desert.

During my recent visit to N'gamiland, in March, 1961. I travelled to the pan lands of Lake N'gami, 75 miles to the south-east of Maun, the administration centre. At the time of my visit this seasonable lake was covering an area of approximately 24 square miles, varying from 2 to 4 feet in depth, and supported a profusion of bird life, including flocks of Flamingo, Pelican, Wood Ibis, Blacksmith Plover, and many others too numerous to list.

The terrain surrounding the lake is flat with little or no vegetation so, on driving round the lakes southern shore, it was easy to pick out the tall grey silhouettes of the Wattled Crane (*Bugeranus carunculatus*). During a fifteen-minute drive over grassy veld I encountered eleven different specimens of Wattled Crane, grouped in twos and threes, walking casually, prodding and probing the ground for insects. On leaving the vehicle I was able to get within 10 yards of them, before they took off, flapping their large wings, gradually gaining height, uttering loud cries of protest for being disturbed in their daily terrestrial foraging.

In an article in the Avicultural Magazine, Vol. 9, No. 6, November–December, 1944, entitled " A Rare Baby Crane ", by Lee S. Crandall, he writes that the Wattled Crane is the very rarest of the group and the birth of one in 1944, in New York, was the first recorded hatching of this species, apart from a hybrid between the Wattled and Canadian Crane, which was reared in England in 1911.

To the best of my knowledge, Paignton Zoo, in Devon, is the only zoo in the British Isles to possess a pair and, with the obvious scarcity of these birds, it is very encouraging that in some remote areas in Africa Wattled Crane are still fairly plentiful and not in any immediate danger of being exterminated.

J. J. C. Mallinson.

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AVICULTURAL MAGAZINE

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Birds



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Fire-crowned Bishop.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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THE FIRE-CROWNED BISHOP

By Derek Goodwin (London, England)

Weavers (*Ploceidae*) are well known to aviculturists and deservedly popular as most of the more commonly imported species are brightly coloured, hardy, and easily fed in captivity. The Fire-crowned Bishop (*Euplectes hordaceus*) also known as Red-crowned Bishop, Black-winged Red Bishop, and Crimson-crowned Weaver is one of the most brilliant of them all. It is, however, less freely imported by bird dealers than the equally brilliant Red Bishop (*Euplectes orix*) also known as Orange Bishop, Orange Weaver, Grenadier Weaver, Fire Weaver, and Fire Finch.

The Fire-crowned Bishop is larger than the form of Orange Bishop most commonly imported (from tropical West Africa) but little, if any, larger than the southern form of Orange Bishop which dealers usually distinguish by the name of Grenadier Weaver. When in breeding plumage the male's red or orange crown distinguishes him at a glance from male Orange or Grenadier Bishops which have the forehead and crown black. In *all* plumages the male Fire-crowned Bishop can be distinguished by his black primaries and secondaries, those of *Orix* being brown. The red of the male Fire-crowned Bishop is usually a little paler than that of the West African Red Bishop being a vivid orange or fire-red rather than geranium red. Most (but not all) wild males are, however, a rather deeper colour than the one shown in the accompanying plate. Like the Red Bishop captive Fire-crowned Bishops assume a paler, more orange red after moulting in captivity, particularly if they are kept in cages or small aviaries.

The Fire-crowned Bishop is found across the central parts of Africa from Senegal and Angola east to the southern Sudan, Ethiopia, Southern Rhodesia, and Tanganyika. It inhabits grassy country, especially areas where there is high grass near to water. The nest is a domed purse of grass with a hole in the side and a porch of grass seed-heads. The nest, minus the porch, is built by the male, the female adds the porch and also continues to add further material to the nest itself during incubation. Only the female incubates and cares for the young.

In a wild state the Fire-crowned Bishop appears only to have been recorded eating grass seeds and, where available, cultivated grains.

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It doubtless takes insects also and the young are known (from stomach contents of collected nestlings) to be fed, at least partly, on insects.

The plate shows a pair immediately prior to copulation, the female soliciting with slightly opened and fluttering wings and the male puffed out in a manner apparently similar to that used in the territorial display flight (see Lack, 1935). The artist watched the birds wild in Sierra Leone and later made the painting of an actual scene she had observed.

The breeding behaviour of this species was studied in a wild state by Dr. David Lack. I have summarized his findings (or some of them) in this note but all readers interested in this species should read his paper in full.

I regret I have never kept this species so cannot give any advice, based on experience, of how to treat it in captivity. It is to be hoped, however, this plate and this lack in my accompanying notes will induce some reader who has kept the Fire-crowned Bishop to give us a fuller account of it.

REFERENCES

Lack, D. (1935). Territory and polygamy in a Bishop Bird, *Euplectes hordacea hordacea* (Linn.), *Ibis*, 5, 13th Series, pp. 817–836.

* * *

BREEDING THE MALABAR OR INDIAN BLUE-WINGED PARRAKEET

(*Psittacula columboides*)

By E. D. W. Jayewardene (Kandy, Ceylon)

The Malabar or Indian Blue-Winged Parrakeet (*Psittacula columboides*) is found only in the hill country of South-western India, where according to the noted Indian ornithologist Salim Ali, it is a prized rarity. A beautiful bird, it is remarkably similar in appearance, habits, and call to the Layard's or Emerald-collared Parrakeet (*Psittacula calthorpe*) which is peculiar to Ceylon and found only in the hill country of the island.

Bates and Busenbark describe the Malabar in their excellent book on *Parrots and related birds* as " shaped like a Ring-necked and about the same size. The male has a red bill and a slightly rose-tinted grey head, which has a tinge of powder-blue on the forehead and a tinge of pale green around the eyes. The black ring is bold and meets at the

back of the neck. A pale blue collar follows and graduates to a paler green below the throat. The chest, abdomen, and mantle are soft grey with the rose cast present again. The wings and tail are blue and are darker on the flights. The wing feathers have paler edges giving them a scalloped effect and the tail has yellowish tips. The vent, tail-coverts, and the underside of the tail are a yellowish-green, which becomes less yellow on the tail. Females have black bills and lack the collar. The rose cast is absent from the grey areas. The wings are duller ".

My breeding pair was obtained from a dingy little *boutique* in a back alley behind the Mysore Market. They were fledglings when I bought them, with several others, in May, 1960. They were just able to eat by themselves and were on a diet of ripe mangoes.

On their arrival in Ceylon they were housed in an outdoor aviary and placed on a diet of bread and milk and mixed seed—a paddy base with sunflower seed, oats, Indian and Pakistan millet. Fruit and ground nuts were also given. No vitamins of any sort were added to their feed. The bread and milk was discontinued as soon as they stopped eating it.

This pair first nested in January, 1962. Four eggs were laid, but all were infertile. On the second occasion the birds commenced mating last November. As they were in an aviary with a pair of Eclectus Parrots I transferred them to another aviary by themselves. They settled down almost immediately and within a matter of days the hen was on eggs. The nest-box was a small wooden box approximately 9 inches square by 14 inches long. An entrance hole about 3 inches in diameter was made 3 inches from the top of the box. A 4-inch layer of sawdust was placed at the bottom. At no time before or after the eggs were laid did the male make any attempt to enter the box. The hatching of the eggs was done entirely by the female. Not only did the male not help the female to hatch the eggs but he took good care to perch each night as far as possible from the nest-box during the time the hen was on eggs.

Unusual activity on the part of the hen early in January indicated clearly that the chicks had arrived. The birds were immediately supplied with plenty of bread and milk, sunflower seed, Indian corn on cob in addition to their usual food. The feeding of the chicks for the first five or six weeks was done entirely by the female. The male fed the female, who in turn fed the chicks.

After the sixth week I observed the male entering the nest-box for the first time and feeding the chicks. The first chick emerged from the box a few days later. The next came out about a week later. When the second chick came out I observed yet another chick in the box. As this chick showed no signs of leaving the nest I became impatient and opened the box. I found two chicks inside. I replaced the box with the two chicks. The third chick came out a few days after this and the other one a few days after the third left the box. They have all left the nest now and I have four healthy young Malabars.

The young ones are almost as big as their parents. They have light orange bills and the black ring round their necks. They do not have the grey tinge with the rose cast on their heads and bodies. The wing feathers have the scalloped effect. The bills, as in the case of the Layard's or Emerald-collared Parrakeet, start off as orange then turn black and finally the males get their red bills while the bills of the females remain black.

* * *

THE BREEDING OF THE PLUMED OR SPINIFEX PIGEON

By Charles K. Lucas (Melbourne, Australia)

In the *Avicultural Magazine*, 1962, page 78, there appears a note of a breeding by me of two nests of two each of the Plumed or Spinifex Pigeon. Not long after this note appeared I received a letter from Professor Carl Naether of Encino, California, stating that he was very interested in the fact that I had bred this bird and asking me to write an article about the breeding for publication in the Avicultural Magazine. Unfortunately I had not paid close attention to the time of incubation and other details in regard to the breeding and I decided that I would wait until this last season to see whether the birds bred again and in that event I would make some notes of the activities of the birds. As one might well expect the little wretches did not breed during the last season although it appeared on several occasions that they were about to do so, but I think that they were disturbed by a pair of Brown Quail which were in the same aviary and their efforts came to nothing. However, in order not to disappoint Professor Naether, I have decided to put down such details as I can give in regard to the breeding of these birds.

The Plumed or Spinifex Pigeon (*Lophophaps plumifera*), sometimes called the Plumed Ground Dove, is a native of Australia and is abundant in the Northern Territory and also occurs in Queensland. They prefer hot, dry, and arid conditions among rocks and sand and they are fond of perching on a rock in the full glare of the sun which, in their special habitat, can be very hot indeed. Their natural food is the seed of the spinifex shrub which thrives in the arid conditions in which the birds are found. Their general colour is a pale cinnamon with the neck, mantle, and wing-coverts barred with brown, the latter and the scapulars being grey at the base and some of the inner secondaries are glossed with bronzy-purple on their outer webs ; the forehead and ear-coverts are grey and the centre of the crown has a long crest feather,

cinnamon in colour, the cheeks and throat are white with a line over the eye and gorget black ; a greyish-white band runs across the breast, the centre of the abdomen is white and there is bare crimson skin around the eyes. The female is very similar to the male, but smaller in size. However, they are difficult to sex. They are usually seen in pairs or flocks and appear to be remarkably tame and difficult to flush from the ground. They usually lay two eggs on the ground in a depression sheltered by a low bush or clump of spinifex. The eggs are pale creamy-white and the breeding season occurs after rain throughout the year.

The Spinifex Pigeon makes a very attractive aviary bird provided that not more than one pair are kept in the same enclosure as they are apt to fight amongst themselves and can inflict severe damage on one another. They are extremely dainty birds and the mating display of the male is most attractive. He faces the hen bird and bows rapidly towards her at the same time spreading his wings and tail feathers and uttering a loud coo.

The Spinifex Pigeon is commonly kept in aviaries in Australia and they do quite well, even in Melbourne, where the climate has very little similarity to that experienced in their native habitat. Although they are not freely bred many fanciers have bred them and it is a question of securing a breeding pair as is the case with most birds which are rare. My pair was housed in a large L-shaped aviary, the shelter being 28 by 9 feet and the flight section being 21 by 16 feet, which was heavily grassed. They were housed with a mixed collection of finches and doves, including Green-winged Pigeons. Apparently they do not like to nest in long green grass. A fellow breeder informed me that his pair had nested in the shelter after he had dug up a tussock of grass and planted it in the shelter to provide cover for them ; they laid their eggs in a small depression behind this tussock. I tried the same device but the birds did not appear to be interested during the 1960 breeding season. However, in about October, 1961, I found that the hen bird had laid two eggs on a heap of dried grass clippings in the shelter in quite an exposed position and after a time I saw that she was sitting on them. In order to provide her with some cover I broke off some twigs from the tea tree in the aviary and built these up into a kind of bower around the nest. This of course was done while the bird was off the nest but I found that I could approach very close to her when she was sitting without disturbing her. The cock bird took his turn at brooding and, after about seventeen days, two young were hatched. They were very small but grew extremely rapidly. They were a delightful chocolate-brown colour and during the first fortnight or so after they were hatched they sat very still in the nest when the parent bird was off the nest. However, after about a fortnight, they began to move about and could run very rapidly all over the aviary. It was not very long before they began to take on their adult plumage and I suppose

that, by the end of a month, they were hardly distinguishable from their parents.

When the young birds had almost attained adult plumage, the hen bird laid two more eggs, again in an exposed position and again I adopted the device of making a bower around them constructed of broken twigs from the tea tree. Two young were duly hatched and again they quickly reached adult plumage. The hen went down a third time and very soon two more young were hatched and duly reared, making a total of six young birds from the three nests between October, 1961, and February, 1962.

I left the six young with the parents for some time and eventually I noticed that they were attacking each other and very soon two of them had been rather severely mutilated around the top of the head and of course I had to separate them. They quickly regained the crest feathers and were soon again in first-class condition.

As already mentioned, I was looking forward to their nesting again in the 1962–63 season but they did not do so. I am almost certain that this was due to the interference of a pair of Brown Quail in the aviary as I saw the latter chasing the Spinifex Pigeons on a number of occasions. I removed the Quail after a great deal of trouble in catching them in the long grass but apparently the Spinifex Pigeons had been " put off " and they did not do any good. I still have the parents and am hopeful that they will do the right thing again next season.

I find that pairs differ considerably. Some are very wild and if kept in a small enclosure they are apt to fly up and knock the top of the aviary doing themselves damage on the head. Other pairs are quite docile and do not panic even when one walks up quite close to them. They love to bask in the sun and often they can be seen lying on their side with one wing raised, obviously enjoying the hot sun. Although they have to be brought a long distance from Northern Australia they are often available in Melbourne through the dealers and cost from £4 to £5 per pair. They make delightful aviary birds and do not interfere with the other inmates of the aviary but, as stated above, it is not advisable to house more than one pair in the same aviary.

* * *

BREEDING THE BLACK-THROATED COTINGA

(*Pipreola riefferi*)

By Charles Everitt (Trenton, New Jersey, U.S.A.)

The Cotingidae family of birds is confined to the New World and, although they are mostly to be found in the Amazon region, they have spread north as far as the borders of the United States and southward to northern Argentina. There are some ninety species in all, embracing such birds as Cocks of the Rock, Bell Birds, Umbrella Birds, Fruit Crows, etc., their size varying from 3½ to 18 inches. Some of the species are known as Chatterers and are recognized under the common name of Cotinga, and it is with one of these that I am now concerned.

They are arboreal birds taking fruit and insects as their main diet and require careful acclimatization to be kept alive in captivity. From experience gained in the keeping of two species, the Black-throated—*Pipreola riefferi*—and the Orange-breasted—*Euchlornis jucunda*—it seems that they do not adapt themselves well to cage life but do thrive in an aviary. Two pairs each of the aforementioned species came under my care at the Boehm Aviaries in January, 1961, having been brought back by Mr. Boehm after his visit to Ecuador. It was a long drawn-out winter in New Jersey that year, and they had to be kept in cages until such time as it was possible to complete the aviaries in which it was intended to place them. During this confinement, one male Black-throated and a pair of the Orange-breasted were lost. Eventually, the remaining three Black-throated were housed in an aviary containing several other birds that included Ross's Touracos, Black-headed Orioles, Naked-throated Bell Birds, Kurrichane Thrushes, and some four or five other species as well. The aviary was 60 by 20 feet, well planted, had a stream running through it, and was piped for hot water heating during the winter period. The pair of Orange-breasted were placed in another aviary of very similar design, also in company of a number of other birds. The time that these movements took place was May, 1961.

In April, 1962, one of the female Black-throated Cotingas began nest-building in a hemlock tree situated at the lower end of the aviary, overhanging a pool. It was an open cup-nest built within a basket originally positioned in the expectation that the Kurrichane Thrushes might make use of it. The materials employed were dried grasses, rootlets, and horsehair, the latter item being woven in with the other materials, binding them together. An egg was laid on 17th April, followed by a second on the 18th, and incubation began with the laying of the first egg. The eggs were pale brown, spotted with sepia, heaviest at the thicker end, and measured 25 by 18 mm. Incubation was carried out entirely by the female and it was noticed that, whenever the other female approached the tree containing the nest, the male chased

her away. To avoid trouble, this spare female was transferred to an adjoining aviary.

The male fed his mate on the nest and, when she vacated it for a bath—they are ardent bathers—or for any other reason he stood guard over the eggs standing on the edge of the nest, but making no attempt to cover them. Unfortunately both eggs were clear and it was not until 12th June, that another was laid. This time there was a three-day interval before the second of the clutch was produced. One egg hatched on 20th June, and the second on 2nd July, but this chick died three days later. Both parents fed the nestling, the initial diet consisting entirely of live-food in the form of mealworm pupae, moths, flies, and other insects. At ten days old, fruit and ground raw beef were included in their feeding and the male even caught small minnows out of the pool and fed these both to the young bird and to the female. These fish actually were netted from a nearby brook for feeding to the Pigmy, White-collared, and Striped Kingfishers we had and were just stored in the pool for convenience. Having very little reference literature on this species of bird it was enlightening to learn that they are live fish eaters. They do not kill the fish in the normal manner of Kingfishers but just swallow it alive, head first. Owing to the location of the nest it was not possible to follow closely the progress of the nestling but, at fourteen days old, it was found dead on the ground immediately below the nest. At that stage it had a fair amount of green and yellow feathering showing and its eyes were open.

No definite cause for the young bird to have fallen out could be decided upon as the nest was quite deep and the nestling, so far as could be seen, had shown no signs of great movement in the nest. Consideration, however, had to be given to the parent bird having accidentally pulled the chick out when disturbed by some other bird in the aviary. To obviate any recurrence of such disturbances, a portion of the aviary was divided off for the sole use of the pair of Cotingas. They certainly were intent upon having a family for, on 24th July, yet another egg was laid with a second on the 26th. Even this was not to do the trick for one egg was clear and, although the other hatched, the chick died on the second day. The female was still as keen as ever and promptly began to rebuild the nest in the course of which she got entangled in a strand of horsehair and hung herself.

It is very true that to breed softbills one must have plenty of patience and be prepared for setbacks. With this pair of Cotingas we felt that we had had a full share of the adversities attached to the hobby, but never daunted and ever hopeful, the other Black-throated Cotinga female was introduced to the widowed male the day following the tragedy. Close observation of his reactions towards her was kept and, although he was inclined to chase her around for the first few days, by the fifth day they had settled down well together.

It was on 20th September, that this female was seen taking pieces of nesting material up into a shallow, open box located on a beam just to the side of the entrance door to the aviary. Actually it was the same box that the Kurrichane Thrushes had begun to nest in earlier in the year. Unlike the Thrushes, no mud was used in the construction of the Cotinga's nest which was made up entirely of grasses, rootlets, and horsehair. Incidentally, although the latter item was still supplied despite the previous catastrophe, it was ensured that no strand was more than 4 to 5 inches in length.

The first egg of this nesting was laid on 29th September, with a second the following day. It was noted that the basic colour of the second egg was much lighter than the first, in fact paler than any of the eggs of previous nestings. As on prior occasions, the entire incubation was carried out by the female, the male feeding her on the nest as he had his first mate. In addition to this bedroom service she would accept fruit, ground raw beef, and mealworms from any of us when offered to her in our fingers, but only when she was on the nest. The passage of time revealed that the first egg was clear but the second hatched on 19th October. The female had become so accustomed to us going up to her on the nest that it was possible to maintain a close watch over the nestling without causing any disturbance. It was literally a case of going up to the nest, for it was situated 7 feet above ground level. The young bird's gape was bright orange and the bright pink little body was sparsely covered with black nest down. At six days old quill feathers were beginning to show and, by the 28th, its eyes were open and green and yellow feathering could be discerned. The bill was black, wide, and squat as compared to the fine red bills of the adult birds. At twelve days, yellow tips were visible on the primaries and tail feathers and the white edges to the wing-coverts were most distinct. At this age it was left to itself for periods of forty-five minutes to an hour at a time, so to avoid any chance of it clambering out of the nest, a 4-inch strip of cardboard was stapled to the outside of the box containing the nest. From 7th November, the nestling was perching on the side of the nest, and vacated it on the 9th. From the very first moment it was a strong flier and the following day was standing with its parents at the top of a 16-foot tree.

As stated earlier, the male had assisted in rearing the nestling but, now it was out of the nest, he took over the whole task, even finding time to pass tid-bits to the female. By the second day out of the nest the fledgling's bill had lost its youthful appearance and, although still black, had taken on the shape of its parents'. The basic feather colouring was dark green with yellowish underparts, orange-red legs and feet with black claws. By 25th November, the tail feathers were full down and it was feeding itself three days later, that is, at forty days old. By 3rd December, the bill had begun to change colour at the base

and black feathers were showing at the throat, indicating that it was a male. At three and a half months old it has almost obtained full adult male plumage except that the black on the head still bears some yellow flecks.

The female went to nest again on 14th November, laying two eggs which she incubated steadily until deserting the nest on 1st December. It was then disclosed that both eggs had been fertile but that the chicks were dead in shell at about the twelfth day of forming. At the time of writing this report, February, 1963, she is once more brooding two chicks hatched on the 12th and 13th of the month. It had become necessary to remove the first young male bird as the adult male objected very forcibly to it going anywhere near to the nest, or to its mother whenever she vacated it. After all the upsets we had had prior to the successful rearing of the first young Cotinga, we did not wish to run any undue risks of having anything happening to it and we also wanted to give the new arrivals every chance of reaching maturity.

Being more interested in detailing all the nesting behaviour and development of the young, I now realize that I have omitted giving any description of the adult birds so I will endeavour to rectify that forthwith. About 8 inches in total length, the sexes are dissimilar, the male having a black head and throat with a yellow collar extending from the base of the neck round to the upper throat. Here it blends in with the yellowish-green underparts. The upper plumage is dark green from the back of the head through to the tail, including the wings, the upper coverts of which are white tipped. The tail feathers are green above tipped with yellow, the undersides being dark grey, almost black. The upper surface of the flight feathers also is green edged with yellow, the back of the feathers being dark grey. The eye is dark brown, almost thrush-like in its boldness and round shape. The bill is bright red as are the legs and feet, the claws being black. The female is green throughout, with slight yellow fleckings, and the upper wing-coverts are white edged. The eye is brown with a fine yellow line encircling it. The legs and feet are similar to the male's, even to the black claws, but are a lighter shade of red. The bill also is red but features a black tip, entirely lacking with the male.

I have not been able to trace any previous report of the breeding of a Cotinga in captivity and further information on this would be appreciated. It does appear, at first sight, that this may well be the third first breeding in captivity to have been achieved by Mr. Boehm in 1962, the other two having taken place in the upper portion of the same aviary and were reported upon in the November–December, 1962—Rails—and the January–February, 1963—Kurrichanes—issues of the Avicultural Magazine.

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NOTES ON AUSTRAL AND SOUTHERN PACIFIC BIRDS

III.—Victoria

By Jean Delacour (Clères, France)

(*Continued from page 120*)

Three days spent in Melbourne is much too short a time to enable me to give an impression of the State of Victoria, the coolest and one of the most attractive parts of Australia ; I very much hope to pay it a longer visit in the near future. Nevertheless, I saw in the vicinity of this large and beautiful city exciting things which I want to mention here.

My friend Professor A. J. Marshall, of Monash University, one of his assistants recently arrived from Scotland, Dr. Doward and Mr. M. C. Downes, Superintendent of Game Management of the State, were kind enough to take us to various areas where bird life is unusually interesting.

The Biology Institute of the Monash University has just been completed. It struck me as one of the best equipped that I have ever seen. Dr. Marshall who heads it, has spent many years in England and has seen much of the world ; he can be congratulated for its excellent planning. One of its features is a large piece of land, with trees and ponds, which has been set apart for living animals, both wild and captive, a great and rare asset to such an institute. Cereopsis Geese, among other birds, are studied there at present.

The Fisheries and Wildlife Department of the State of Victoria is also making an effort to preserve, study and propagate game. The reserves, stations and laboratories now being set up under Mr. Downes' management, will certainly prove very useful. We visited with him one day the marshy districts west of Melbourne where a large wild life park is being established. Cormorants and Herons were nesting on dead trees in and along the lakes, on which Black Swans, Australian Shelducks, White-eyes and other ducks were numerous.

We spent another day in the hilly country to the east. We drove on highways along which, in certain places, Koalas were common in light eucalyptus forests. There were also many eastern Rosellas and various passerine birds.

Higher up in the hills, in a more moist climate, we found one of the greatest sights of Australia in Sherbrooke Forest, the famous Lyre Bird Refuge. The road is lined with suburban houses, attractive in large, well-shaded gardens, until you enter the forest. Huge eucalyptus trees, *E. regnans*, a large species resembling the western Karri, (*E. diversicolor*), raise their enormous trunks 250 feet high. As it is always the case with such trees, they have only thin canopies which do not stop the light, so that there is much undergrowth, particularly

large tree ferns (*Dicksonia*), among which Lyre birds find favourable conditions of life. These wonderful birds, one of the largest of all passerines and peculiar to eastern Australia, are very numerous there, as they are indeed in many suitable places in Victoria and in New South Wales, thanks to proper conservation measures. But those of Sherbrooke Forest have one peculiarity : they are tame. Elsewhere, they usually can be heard, but seldom seen, as they are expert at hiding in the brush and remain very shy. We could watch for a long time a cock singing loudly a few yards away, and we saw several others. In a more favourable season it is not unusual for a bird to display while surrounded by a ring of visitors. There are many small birds in the refuge, but, aside from the Lyre birds, the large number of Pennant's Parrakeets, or Crimson Rosellas, which nest in the holes of the Giant Eucalyptus, are a striking feature of this marvellous spot.

Another one is the Healesville Sanctuary at some distance from Sherbrooke Forest, also in the hills. This excellent and almost complete collection of live local animals and birds has been very well installed, in pretty natural surroundings by Mr. David Fleay, an expert Australian naturalist, who now possesses a private wild life park near Brisbane. The Victoria State however now keeps up the Sanctuary. A perfect Platypus, swimming briskly in a large aquarium, was the most striking exhibit at the time of my visit, but there were many other excellent displays, particularly a large, thickly planted aviary with several Lyre birds. Wild birds also abound at Healesville. Small Honey-eaters and White-eyes feed here and there, entering pens through the large mesh wire netting, and we saw King Parrakeets and Gang-gang Cockatoos in the high trees.

Melbourne has large and beautiful parks and the suburban gardens are pretty, well planted and well kept. The temperate climate gives it quite a European aspect, to which many introduced birds contribute. As everywhere else in the southern half of Australia, Starlings, Blackbirds, Goldfinches and Skylarks are very common. There are also many Song Thrushes, some Greenfinches and Tree sparrows, and two Asiatic birds have also been acclimatized : Common Mynahs and Spotted Turtle Doves.

IV.—Central Australia

Alice Springs lays practically in the centre of the continent, and it is a long flight from Adelaide, over arid country and even true desert. But there is a good deal of vegetation in the country around the lively town : large eucalyptus, various small trees and brush. It is astonishing that such growth thrives under dry conditions (3 to 4 inches of rain a year) but Australian trees and shrubs are better adapted to an arid climate than any others. There are many long, rocky ridges, and dry red hills. Gaps in the former occur here and there, forming striking

gorges, usually with permanent, but barren pools of fresh water. It is a strange, awesome, but picturesque scenery, where bird life is abundant and interesting. Red-tailed Black Cockatoos and Galahs are often seen, and also Many-coloured and Port Lincoln Parrakeets. Flocks of Budgerigars are met with, some very large, as well as great numbers of Diamond Doves and Zebra Finches, while Cockatiels fly gracefully here and there. There were so many of those common birds, so well known in captivity, on some dead trees surrounding a water tank, that it incongruously reminded one of an over-crowded bird shop !

Water birds are naturally scarce in the desert. But we saw several species of Dotterels around pools, and a few Pink-eared ducks were swimming on a large tank. Pratincoles swarmed along the road, and there were lots of birds in the bush, among which Crimson and Orange Chats (*Epthianura*) were particularly attractive. On rocky, red hills live two of the most striking birds of the district : Painted Finches and Plumed Ground Doves, both quite common.

We had a glimpse of the Ground Cuckoo-Shrike (*Pteropodocys*) and the Red-backed Kingfisher (*Halcyon pyrrhopygius*) and many Masked Wood Swallows flew and perched along the road. The curious " Song Larks " (*Cinchloramphus*) were common near irrigated cultivation, looking and behaving much like some African Pipits. The common Australian Pipit abounded there as almost in every other part of the country.

We had a very good idea of the local bird life, thanks to Mr. A. E. Newsome, naturalist of the Animal Industry Branch, and to Mr. and Mrs. Ray Rothwell. Mrs. Rothwell is an enthusiastic student and watcher ; she knows the local birds extremely well and her kind help in taking us through the country in search of them was invaluable.

V.—Northern Territory

We next flew to Darwin, on the northern coast. The country is fairly flat and hot, but rather well wooded. Although the rainfall is considerable, it has a long dry season. Eucalyptus and Pandanus dominate, forming extensive forests. There are open spaces, and the Commonwealth Government operates in the vicinity a large experimental station dedicated to rice cultivation. We spent a memorable day there, about forty miles north-east of the town. There are marshes and ponds, much reduced at the end of the dry season (October), where the concentration of water birds is tremendous, both on the water and the banks. Magpie Geese were abundant, most of them dyed brown by the ferruginous, muddy water, and hardly recognizable at first. Many Grey Teal and Black Ducks swim along with the lovely Green Pygmy geese. Whistling Ducks (*Dendrocygna arcuata*) are numerous.

The most interesting species, however, was the Radjah Shelduck. Dozens of them were seen on the banks of different ponds, behaving much as Common Shelducks do in Europe ; but they live near fresh

water, not on the sea shore ; they look beautiful on the wing. There are also many Pelicans, Cranes, Darters, White-necked Herons, Royal Spoonbills, Plumed Egrets, Glossy and Straw-necked Ibises, Stilts, Avocets, Whimbrels, Dotterels, Masked Plovers, Terns, Jacanas and other shore-birds. Feral Water Buffaloes wallow in the water by the hundreds. For the first time in my life I saw together over twenty Black-necked Jabirus, a usually solitary stork. Red-tailed Black Cockatoos perched on trees, as well as hundreds of Corellas. Bar-shouldered Doves and Finches abound in the bushes : Crimson, (*phaeton*) Black-rumped Bichenow, Long-tailed, Masked and Chestnut-breasted. This fascinating area constitutes an important reserve for waterfowl, which spread through the country to breed during the rainy season.

* * *

FURTHER RECORDS OF ANTING IN PASSERINE BIRDS

By K. E. L. Simmons (Ascension Island)

In September, 1961, I was able to make another series of tests with ants at the London Zoo which added six species to the list of birds that I have recorded anting (*Avicult. Mag.*, 1961, 124–132), making a grand total of 102 species. The additional species were :

Family **PIPRIDAE** (manakins) :
Blue-backed Manakin (*Chiroxiphia pareola*).

Family TIMALIIDAE (babblers) :
Rufous Jay-thrush (*Garrulax poecilorhynchus*).

Family PLOCEIDAE (weavers) :
Madagascar Fody (*Foudia madagascarensis*)

Family PYRRULOXIIDAE (cardinal-grosbeaks) :
Indigo Bunting (*Passerina cyanea*).

Family THRAUPIDAE (tanagers) :
Schrank's Tanager (*Calospiza schranki*), **Black-eared Tanager** (*C. parzudakii*).

Of these, the species shown in heavy type have not previously been recorded as anting, while the Pipridae is a " new " family. Another species that I also saw anting for the first time was the Long-tailed Glossy Starling (*Lamprotornis caudatus*), previously included in my list on the authority of Robert Gillmor (ibid., p. 128).

Finally, two small corrections to my 1961 paper : (1) p. 128, third line from the bottom, the additional species referred to should number seventy not seventy-five ; (2) p. 129, the family **PYCNONOTIDAE** should have appeared in heavy type as Mrs. Bucksey's record seems to be the only one for any species of bulbul.

SOME NOTES ON BLACK-CAPPED WAXBILLS

By Derek Goodwin (London, England)

Introduction

I must begin this article with the admission that I have not been very successful with this species. Why then write about it? It is true that, so far as one can judge from the success of certain Sunday papers, there exist in our civilized and enlightened country many people who derive satisfaction from reading about the failures, disappointments, and humiliations of others, but I assume (rightly, I hope) that *our* readers have no such ignoble impulses. I feel, nevertheless, justified in offering my scanty observations because, so far as I can find out, very little has been published on the behaviour of this species. It was bred in the 1930s (and a photo of the young appeared in our Magazine) but the account that accompanied it gave little detailed information. Perhaps others have been more successful than I and, if so, it is to be hoped they will write giving their observations and commenting on mine.

The Black-capped Waxbill or Black-crowned Waxbill (*Estrilda nonnula*) comes from the central areas of Africa and appears to be a bird of forest clearings and grasslands among or near trees or brush. It is a very lovely little bird whose black cap and faint, soft calls give it a remarkable, if superficial, resemblance to a Bullfinch. The latter is, of course, the most " estrildine-like " of the cardueline finches. It (the Black-capped Waxbill) is a finely-barred dark grey above and greyish-white (cleaner and whiter in the male as a rule) below, with a black cap and rather broad, black tail. The upper tail-coverts, lower part of the rump, and a line along the flanks (see sketches) are a rosy crimson. The bill is patterned in red and black on both mandibles.*

In parts of its range this species overlaps with the very similar species—*Estrilda atricapilla*. This latter differs in being rather darker on the underparts, having the red areas a little more extensive and of a more brilliant red, and in having the upper mandible entirely black. The two species occur together (Chapin, 1939) and no obvious differences of voice, behaviour or ecology have been so far recorded for them. It would be most surprising, however, if significant differences did not in fact exist. I recall reading, in an old number of our Magazine, that a collector (I think it was Cecil Webb) who caught numbers of both species found *atricapilla* impossible to keep alive and thought this must be due to different feeding habits.

* In the line sketches, which have no pretension to art or detailed accuracy, the solid black parts of the plumage are shaded dark, the red parts with cross bars. The red parts of the bill are unshaded.

E. nonnula does not seem particularly easy to keep in captivity. I have yet to see one, including, alas, my own, that looked *really* fit and well for more than a few weeks at a time. Loss of feathers in quantity from all parts of the body, but especially the shoulders and neck, seems a common trouble (all the birds I have purchased have had this to some degree when first acquired) and is certainly not caused by plucking during mutual preening, or allo-preening as it is now called. I think the trouble will eventually prove due to some dietary deficiency, though it is hard to say what. I have, as will be seen, tried mine with all sorts of foods but although they have often *temporarily* regained full plumage this happy state has never lasted for very long before bare patches, at least on neck and shoulders, began to reappear. However, of the pair still living the hen has now been in complete plumage for some months and the cock, who had gone very bare on neck and back, has nearly regrown his plumage on these areas. In his case this regrowth started about two months after I had commenced giving the birds Hasting's " Multivitamin " in their drinking water every other day. I am hoping this was a case of " cause and effect " and that there may yet be brighter days ahead for this pair and their owner !

Individuals Studied and their Conditions

I purchased a cock and two hens (all the former owner had for sale) in early November of 1960. A few months later I sent off for another cock which the vendor assured me was in good condition. It certainly was not when it arrived (and it had only a few hours travelling as I met the train) and died within a few days. Later I managed to purchase another cock. As I have said the four remaining birds seldom looked really fit for more than a week or two at a time and the original male died in January, 1962. A little later I gave away the spare hen to someone who had a unpaired cock in a large outdoor aviary. I took her to her new home myself and she and the male greeted one another rapturously, but I have been given no further information about her.

My Black-caps were kept in the same small, well-lighted room as my other waxbills, but at times were temporarily placed in cages in order to elicit calling between mates or companions thus separated. Especially during the first year, and to a less extent subsequently, they showed a certain amount of sexual and reproductive behaviour but never got as far as laying or even completing a nest. It will be appreciated, therefore, that it is quite possible that much, or even all, of the display behaviour I have seen was being shown at a rather low intensity. Similarly the remarks on feeding and food preferences must be qualified by the fact that (in contradistinction to my other waxbills) they cannot be said to have really thriven on the diet.

Feeding and Food Preferences

Small yellow millet, maw seed and canary seed are supplied *ad lib.* So are maggots ; mealworms and whiteworms are given at least three times a week. Seeding and flowering grasses, fresh turfs of young growing grass, soaked or sprouting millet sprays, flowering or seeding knotgrass (*Polygonum aviculare*), and Persicaria are supplied as available. Usually at least one of these extras is supplied on most days. Mineral grit, crushed dried eggshells, and bird sand and, of course, fresh water are supplied daily. When they can be obtained fresh ant pupae, ants, and greenfly are given. Home-made sponge-cake is also given daily, crumbled and placed with the millet in a large tray

The Black-capped Waxbills have varied their diet from time to time as when one, for a period of some months, ate quantities of blow-fly pupae. In the main, however, they take principally millet, both dry and soaked spray millet, maw seed (of which they eat much more per bird than any of the other waxbills do), and sponge-cake which they, like the Rosy-rumped Waxbills, soon started to eat. Of wild foods they are fondest of knotgrass, annual meadow grass (*Poa annua*), wood melick grass, and ryegrass, although eating most other grasses (I mean the ripe or green seeds of flower buds of them) and also chickweed, Persicaria and, sometimes, unripe dandelion seeds if the head is broken open for them

For a long time they showed little interest in insect food other than greenfly. Even ant pupae were only occasionally eaten and maggots and whiteworms were left untouched. This state of affairs changed in February, 1963, however, when the remaining hen started to eat mealworms and blow-fly pupae, at first in small amounts then in some quantity. After a few weeks her mate began to do the same. I will not say " to copy her ", since there was no evidence of this and too often birds are described as learning from others of their kind when the evidence is merely of a " post hoc ergo propter hoc " kind. Now (3rd May, 1963) they have become avid eaters of mealworms and blow-fly pupae. The former are held crosswise in the bill and chewed slowly and deliberately, passing first to one side then to the other until all the inside parts have been forced out and consumed. This is in some contrast to the less efficient and more wasteful mumblings and bangings used by Blue Waxbills (*Uraeginthus* sp.) and Dark Firefinches (*Lagonosticta rubricata*) when eating mealworms. Indeed the Black-capped Waxbills often take and " finish off " half-eaten mealworms that the others have discarded.

Like all my waxbills, the Black-caps eat an appreciable amount of grit and crushed eggshell, often taking these substances shortly after awakening in the morning and *before* they feed, apparently, therefore, on an empty stomach.

When feeding they show the agility and grace of typical waxbills of

the genus *Estrilda*, although their movements appear (and I think actually are) a little slower than those of Red-eared and Rosy-rumped Waxbills (*Estrilda troglodytes* and *Estrilda rhodopyga*). They have the same clockwork-like swinging the tail to one side and then back, sometimes with a tendency to spread the tail feathers as they do so. Food is often held down with the foot and I have seen this done on the ground (or rather the floor of the room) as well as when the bird has taken a grass stem into the branches. Kunkel found that in the *Estrilda* species he studied (Kunkel, 1959), the foot was not used for holding unless the bird was perched.

Voice

All the calls of this species that I have heard are very high-pitched, thin, and faint in sound as compared with the calls of other waxbills known to me.

Contact and Flight-intention Calls

If the bird is uneasy, especially when restlessly flying to and fro it frequently utters a thin, high " T$\overline{\text{ee}}$-t$\overline{\text{ee}}$ " or " T$\overline{\text{see}}$-t$\overline{\text{see}}$-t$\overline{\text{see}}$ " ; especially at the moment of taking flight. This might be considered either as a flight-intention call or a contact call according to whether one named it from its probable motivation or its probable function. It is certainly homologous to the " Tsit-tsit " call of the Blue-breasted Waxbill (Goodwin, 1959).

If a Black-capped Waxbill is out of sight of its mate or companions it gives calls that *to my ear* differ from the above only in being somewhat louder and longer-drawn : " T$\overline{\text{seee}}$-t$\overline{\text{seee}}$ " or " T$\overline{\text{seee}}$-t$\overline{\text{seee}}$-t$\overline{\text{seee}}$ ". Others hearing this answer with the same call. This is perfectly homologous with the contact call of the blue waxbills (*Uraeginthus*) as I have previously described it (Goodwin, 1959 and 1962). It must, however, be pointed out that some authors (e.g. Harrison, 1962) have used the term " contact call " for the notes that are commonly given by active (and probably usually slightly uneasy) birds still in visual contact with each other as well as the louder (and in some cases rather different otherwise) call that is typically given to establish or maintain contact between birds at a distance from or out of sight of each other.

The Alarm Call

Differs (to my ears) from the intense version of the contact call only in having a distinct " r " sound in it which is completely lacking in all the other calls of the species that I have heard. Could be written " S$\overline{\text{rree}}$-s$\overline{\text{rree}}$ ", " T$\overline{\text{srreee}}$-t$\overline{\text{srreee}}$-t$\overline{\text{srreee}}$ ", etc. Given in apparent conflict situations in which there is some fear involved. A rather different version in which a sharp, high-pitched, monosyllabic " Tchink " prefaces the trilling " T$\overline{\text{srreee}}$ " has been heard on a few

occasions when I have closely approached an individual that is in a cage new to it in which it has only recently been placed.

The Nest Call

A faint, soft twittering, very like that of the Golden-breasted Waxbill, but running up and down the scale more and very " pure " and " sweet " in tone. Used by both sexes when nest-calling.

Song

I am not sure I have heard the " song " of this species. A female once gave what sounded like a very loud, long version of the contact call and the male I have now recently uttered a call much like the alarm followed by a contact-call-like note when displaying : " Trreee-teee". On other occasions males never sang when displaying (or made any sound so far as I could hear), which suggests that they may not have displayed at full intensity.

Social Behaviour and Display

The Tail-twist Posture

This posture, common to all waxbills and some other estrildines (see Kunkel, 1959, Goodwin, 1959, Harrison, 1962), is very marked in the Black-capped Waxbill as, at high intensity, the tail and head are both twisted at a fairly sharp angle (see sketch). In this display (Harrison's " recognition posture ") one bird hops or sidles up to



" Tail-twist " greeting display as seen from side.



" Tail-twist " display as seen from above. The head may be more sharply inclined than in this sketch.

another with head turned towards it and tail twisted towards it. At high intensity the body is somewhat tilted and the flank feathers somewhat raised so that the red on the flank joins the red of the upper tail-coverts (both being very fully visible to the bird displayed to) without the wing " bisecting " them as it does when held normally.

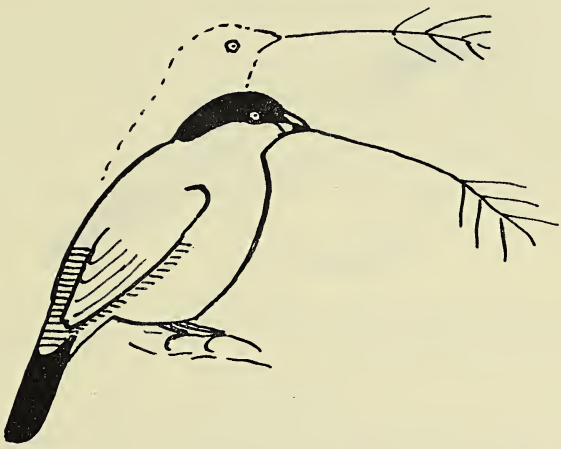
This posture is shown both between mates—especially if they have been separated and then come together again—and towards other individuals, especially strangers. It is not shown between birds that are mutually known and mutually hostile. Or perhaps one should say *overtly* hostile since some aggressive elements may (see Kunkel, 1959) be involved when this display is given. It seems, however, primarily an expression of sexual interest (often at very low intensity) and to function as a friendly or appeasing greeting. As in other waxbills it is usually followed by, or interspersed with, very deliberate bill-wiping. This displacement gesture, being very much more slowly performed, is much more immediately obvious in the Black-capped Waxbill than in other species.

The Stem Display

Although I have seen this display several times I suspect that I may never have seen it at full intensity. Certainly I have never seen it evoke an appropriate response from the bird's mate, although on occasions other species (Blue-breasted and Rosy-rumped) have been attracted to a displaying Black-cap !

The male takes a *slender* stem of flowering or seeding grass by its firmest end in the usual estrildine manner, flies up into the branches

and, after " fingering " the end of the stem with his bill for some moments, begins to display. In this he jerks or throws his head upwards (see sketch), the body jerking up at each throw of the head, but the



♂ in stem display; the dotted line indicates the approximate position in the upward movement (see text).

feet not leaving the perch for a moment as those of blue waxbills usually do when they display. Head at lowest point of movement horizontal or nearly so. The display is usually interspersed and prefaced by little, jerky, side-to-side movements of the head, but I suspect this may be due to a tendency to stop displaying or to look around for the unresponsive mate.

On other occasions I saw a male take a grass stem, fly up with it, and then execute deliberate upward thrusts of the head rather different (head held at an angle) from that described above. This latter movement appeared exactly the same as one of the nest-building movements used by this (and other) species, so I think it was merely a nest-building movement performed *in vacuo*. Of course the stem display is generally (and probably correctly) thought to be derived largely from this or (in some other species) other nest-building movements.

On two occasions I saw a female give a very intense version of the stem display, but without the stem. She held herself rather more horizontal and with feathers, especially on belly, rather more erected than in displaying males and, while displaying, held her bill open and gave a long, intense version of the contact call (or the female song ?). Little can be deduced from only two observations, but it may be worth mentioning that this female displayed in this manner in exactly the same

situation in which I have many times seen a female Blue-headed Waxbill give the stem display, *often without the stem* ; that is when she was apparently trying to attract the interest of her mate and he was indifferent.



♀ Black-capped Waxbill displaying without holding a stem in bill (see text).

Mandibulation

As with other waxbills a rapid opening and shutting of the mandibles is shown in situations of inhibited aggression, particularly in " tiffs " between pairs or other individuals that are not very hostile. It often follows (but never, in my experience, immediately precedes) actual attack. The bird showing it will *not* attack further and usually follows it by more definite appeasing behaviour, such as offering the head for preening.

When mandibulating the bird nearly always faces its partner directly and it seems likely that, at least when it is done at high intensity, the mouth markings are made visible. The striking mouth markings of young estrildines have often been commented on but, at least in the blue waxbills (*Uraegiithus angolensis*, *U. bengalus*, and *U. cyanocephalus*) and the Dark Firefinch (*Lagonosticta rubricata*), they persist in the adult and it seems probable that they have an appeasing function in situations of marital strife.

Mutual Preening or Allo-preening

The latest term decreed for this behaviour is allo-preening, which now takes precedence not only over the admittedly unsatisfactory " mutual preening " but also over the term " hetero-preening ", which was the first one substituted. No doubt by the time this appears in print some authority will have made out a case against the term allo-preening and decreed that yet another term must be used.

Allo-preening in the Black-capped Waxbill does not differ from that of other waxbills (Goodwin, 1960). Unpaired birds of this species were particularly apt to initiate " preening associations " with other

species. When such a bird approached a waxbill of comparable or larger size it would offer its head but when (as more often happened) the little Goldbreast was the species chosen then the Black-capped Waxbill initially " showed its superiority " by preening the latter. The only thing that needs to be added to my previous remarks on this behaviour (Goodwin, 1960) is that although inter-specific associations start, and often long continue, on a purely dominant-subordinate basis with only the dominant bird doing the preening, they may change their character in time. They then become mutual and the little Goldbreast that for months or years has been preened by, say, a Black-capped or Blue-breasted Waxbill, and *not* reciprocated back now preens its stronger companion " turn and turn about ". Human parallels are not far to seek !

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THE HIMALAYAN SNOW COCK

(*Tetraogallus himalayensis* Gray)

By Wolfgang Grummt (Curator of Birds, Zoopark Berlin, Berlin-Friedrichsfelde, Germany)

Five species of the genus *Tetraogallus* (*caspius*, *caucasicus*, *himalayensis*, *altaicus*, *tibetanus*) occur in the high mountains of Asia. The Snow Cock closely resembles the Rock Partridge in habits but is the size of a Capercaillie, the sexes are similar in colour but the cock is somewhat heavier than the hen. The strong feet of the cock, with distinctive short spurs, are particularly striking.

All species of the genus *Tetraogallus* spend the summer above the tree line in the high alpine meadows below the snow line which are covered with rhododendrons. In winter they move to lower areas and like to be in the company of Ibex, which scrape away the snow under which lies their food.

The food of Snow Cock consists principally of leaves and buds of high mountain plants and the corms of various species of Allium, they also eat insects. In winter they eat, in addition, berries, seeds of various conifers, and the fruit of wild roses.

During the breeding season they keep in pairs. While the hen is brooding the cock usually stays quite close by and raises up his voice, which consists of a whole series of calls, especially in the morning. The care and guidance of the young is undertaken by both parents. The clutch consist of 7–15, relatively small, hard-shelled eggs.

Members of the genus *Tetraogallus* are extremely rarely seen in captivity.

On 20th January, 1959, for the first time, the Berlin Zoopark received three *Tetraogallus himalayensis himalayensis* from the Moscow animal dealer " Zoocentre " in transit for an animal dealer in West Germany. These extremely interesting birds were not very timid and also in very good condition. As during their short stay with us the birds at once took food, and we found them most attractive, we decided to attempt to keep them in captivity. On 6th May, 1961, we received from Moscow three Himalayan Snow Cocks, an old cock, one young one, apparently a first-year bird, and a hen. Though the old cock was not in particularly good feather and also had a somewhat overgrown upper mandible the other two specimens were in good condition. After quarantine we put the Snow Cocks in an aviary of about 60 square metres in size. The aviary, which faces south, was arranged so as to provide a suitable living place for these birds ; stones were piled against the back wall, which was roofed over, about two-thirds of the floor was covered with grass, the rest of the space with sand, and several stones about the size of footballs were placed about. A few shrubs were planted for protection from too much sun.

For the first few days the Snow Cocks were very timid and remained at the back of the aviary. Only in the early morning when there were no visitors and they felt undisturbed and unobserved, did they come to the wire-netting at the front of the aviary. But after a short time the young cock uttered a long drawn-out " koooo ". After a few weeks the birds were so tame that even when there were crowds of visitors they showed no fear and took no notice of humans. All three birds got on well together and I never saw any disputes or fights. During great heat they liked to take sun baths ; they lay down flat on the grass or sand in the scorching sun and stretched out their wings, often panting heavily. They frequently stood on the stones in the aviary and at night either roosted on the stones against the back wall or lay in a corner between stones. They never perched though they had the opportunity of doing so.

The moult started at the end of June, beginning with the head and breast. The flight-feathers were dropped from the middle of July. The young cock and the hen came through the moult in a short time but the old cock, which from the beginning was not in very good condition, only moulted partially.

In August the hen died suddenly. The post-mortem revealed that

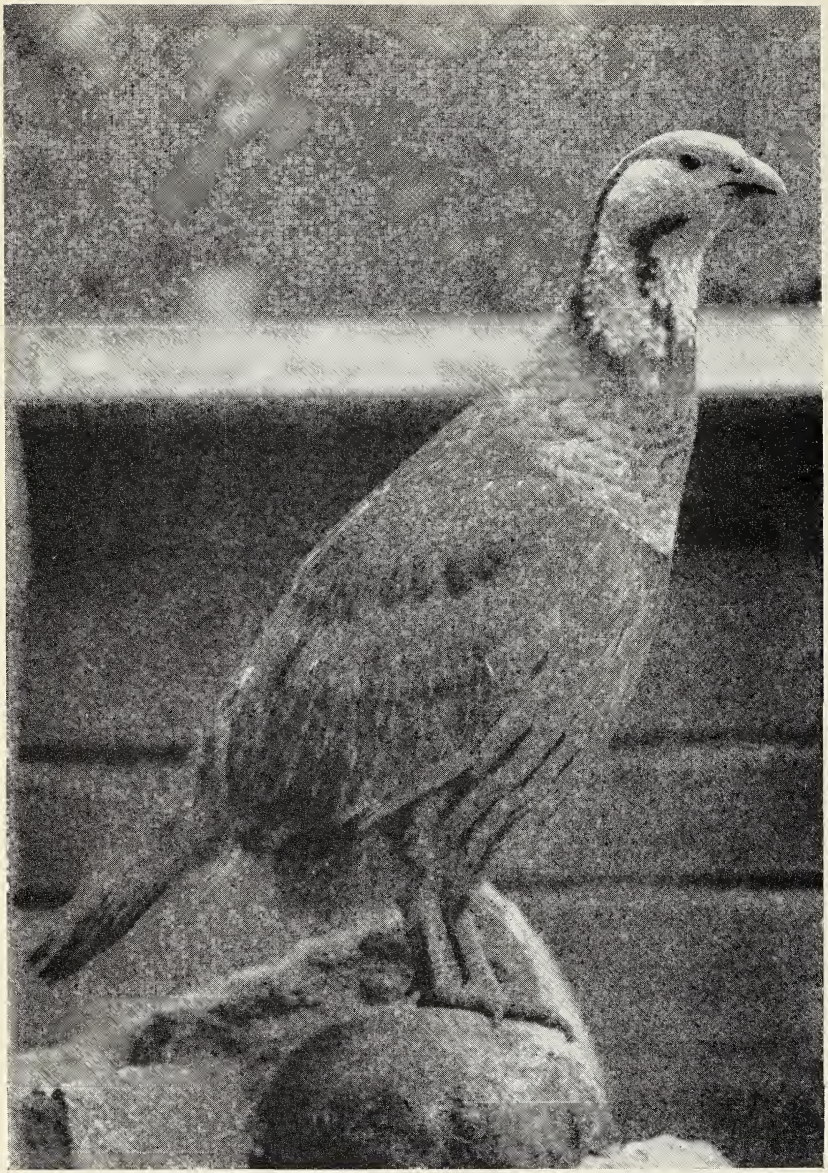


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Himalayan Snow Cock (Male)

[*Gerhard Budich*

[*To face p.* 158



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Himalayan Snow Cock (Female)

[*To face p.* 159

her crop was burnt. She had swallowed a lighted cigarette which some stupid visitor had probably thrown to her. The old cock lived till 5th January ; the post-mortem showed an infection of Heterakis, but this was not the only cause of death. At the beginning of May the young cock showed unspecific signs of sickness. It no longer ate well and mostly sat motionless in a corner with its feathers puffed out. It died on 24th May, in spite of all veterinary aid, and the post-mortem showed that it had bird cholera.

In June, 1962, we received a further three Himalayan Snow Cocks which unfortunately all arrived in very bad condition. All three had considerably overgrown upper mandibles. Two days after arrival they were dead.

Our experience with Snow Cocks shows that it is by all means possible to keep these interesting birds in captivity so long as they are well acclimatized before they are received. It certainly should also be possible to breed these imposing birds in captivity in due course.

In accordance with their feeding habits in the wild, the Snow Cocks were fed principally on fresh green food. Every day the three birds ate a whole pailful of freshly cut grass and also liked the leaves of clover and lucerne ; in addition we gave them mixed corn. They would not eat soft food with ants eggs which we provided regularly for them.

Three very similar races of the Himalayan Snow Cock (*himalayensis*, *gronbczewski*, and *koslowi*) occur in the high mountain slopes of the West Himalayas, the Pamirs, Tien Shan, Kunlun, and Turkestan as far as the Koko Nor Mountains.

Our birds were captured in the West Pamirs and therefore belonged to the race *Tetraogallus h. himalayensis*. The crown and back of head and nape are ash grey, sides of head light grey shading into white. Throat white surrounded by a chestnut-coloured band ; on the sides of the neck a chestnut-coloured stripe descends from the eye. The breast is light grey with black markings. The remaining underparts are finely flecked with grey and brown, the flanks being more bluish-grey with cream and black stripes. The upper parts are greyish-black with longitudinal rust-coloured stripes. The primaries are white with brown tips and the tail feathers reddish-brown with brown flecks. There is an orange-gold strip of bare skin behind the eyes. The iris is dark brown, bill horn-coloured, and feet orange-red.

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THE PARROTS OF AUSTRALIA

By Joseph M. Forshaw (Canberra, Australia)

(*Continued from page 79*)

5. The Galah

(*Eolophus roseicapilla*)

The Galah or Rose-breasted Cockatoo, as it is often called overseas, is undoubtedly the most widespread and abundant of all the parrots inhabiting Australia. Most people in this country are familiar with this handsome pink and grey bird in the wild state, while its popularity as an aviary and cage bird is exceeded only by that of the Sulphur-crested Cockatoo (*Cacatua galerita*). Indeed so common is this species that it ranks high in the list of our most abundant birds.

First described by Vieillot in 1817 from a specimen received at the Paris Museum, the Galah had to wait the extension of the new colonies to the inland regions before it was made known to science. Kuhl, in 1820, described it as *Psittacus eos*. Bonaparte formed the genus *Eolophus* in 1854, but this was not readily accepted as *Cacatua* was used by most ornithologists to cover this species. With the change from *eos* to *roseicapilla* because of priority, this name remained for some time and is the most popular term used at present. *Eolophus* was again brought to the front lines by Mathews in 1917 but his views were not generally accepted and *Cacatua roseicapilla* remained as the usual name for the Galah. The author, however, is strongly in favour of the retention of *Eolophus* and believes it must take preference over *Cacatua*. This will be discussed fully in another section of this paper.

A very attractive combination of pink and grey is exhibited in the general plumage of this bird. The short crest is white with a pink suffusion through the base of the feathers. The nape, neck, cheeks and underparts are pink which merges with a greyish-white on the lower abdomen and vent. The back, wings, and tail are pale grey becoming much darker towards the wing tips and the end of the square tail. The scapulars are very pale, almost white. This marking is very noticeable in flight. The orbital ring is red, while the feet are grey and the bill white. The colour of the iris is quite an important sexual differentiation and will be discussed fully later. It is a medium-sized bird and a pair taken by the author near White Cliffs, N.S.W., on 21st August, 1962, gave the following detailed information :—

	Total Length, ins.	*Tail, ins.*	*Wingspan, ins.*	*Culmen, ins.*	*Iris.*	*Feet.*
Adult male .	15·0	5·5	33·0	1·4	Darkest brown	Grey
Adult female .	14·5	5·5	32·4	1·1	Reddish	Grey

Systematic Discussion

As mentioned previously there has been considerable controversy over the generic name applicable to this species. *Cacatua* is almost universally used but, in the author's opinion, this cannot be justified. He thinks that the Galah should not belong to the same genus as the Sulphur-crested Cockatoo. It is outside the scope of this paper to deal with the over-all systematics of the Cacatuinae but the author is by no means satisfied with the present arrangement generally adopted for the white cockatoos. Much research and investigation is being put into this subject and the final results will be subsequently published in another paper. However, at present the author is strongly of the opinion that the genus *Eolophus* should be reintroduced for the Galah and this is hereby formally advocated.

At the turn of the century a detailed study of the cranial osteology of many species of parrots was carried out and this produced many differences within the Cacatuinae. However, very little assistance was given to the classification of this group because of the lack of a definite conclusive pattern. Many species, including *E. roseicapilla*, differed from others to which they were obviously related, while they resembled species which were obviously far more removed in relationship. This was brought about by many factors, one of the most prominent of which was adaptations arising from diverse feeding and general habits.

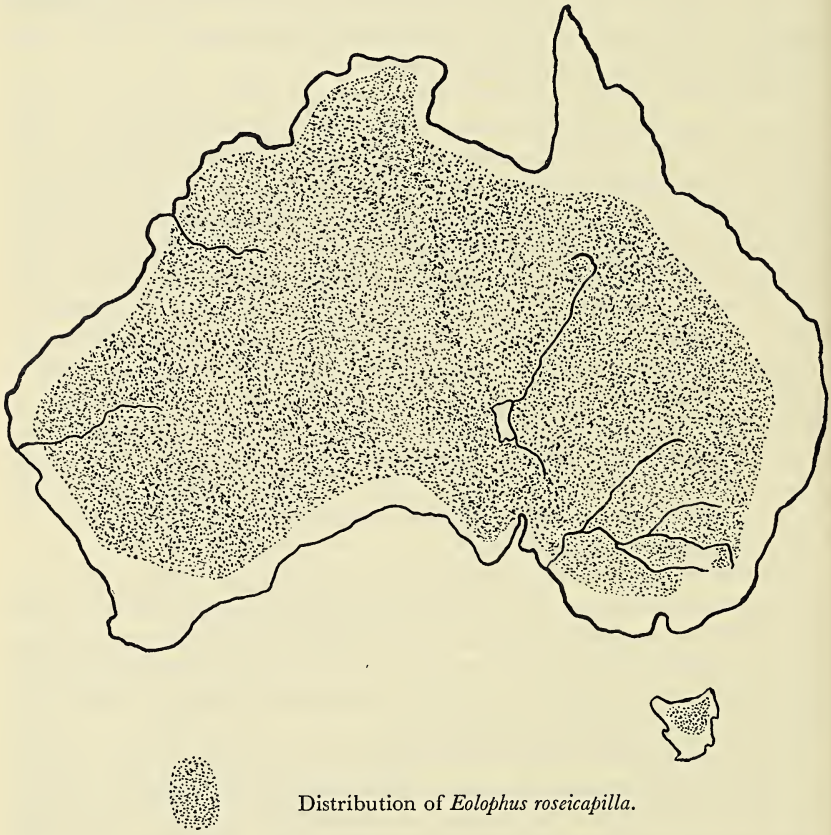
In assessing the validity of separating the Galah from the Sulphur-crested Cockatoo one can only be guided by a combination of differences. Present investigations being undertaken by the author and other interested parties concern such important factors as blood analysis and general protein structure, but these are only in the preliminary stages and for the purposes of this paper we will have to be content with relative differences.

It is widely accepted, and rightly so, that plumage colouration is not an important factor in the systematics of birds as this property can be altered by environment and other conditions. However, colouration is a very good indicative factor and as such should not be completely overlooked. No person can deny the strong plumage differences between *E. roseicapilla* and *C. galerita*.

Rather than give a list of the differences concerned and be guilty of repetition when each is dealt with individually, it is the author's intention to bring to the reader's notice these apparent conflicting properties when discussing call-notes, flight, field habits, etc.

It would not be superfluous to mention here work that has been done in the field of ethology concerning the parrots. Some ornithologists have drawn attention to a definite pattern that exists in the manner of head-scratching used by members of Psittaciformes. The Cacatuinae, for instance, all scratch under the wing while the Platycercinae invariably scratch over and so on. However, with the cockatoos one member,

the Galah, often shows a tendency to scratch over with two records of captive birds actually scratching in this manner. The ethological field is a comparatively new one and hence has not gained the importance it will receive when ethologists become more proficient. It is undoubtedly a most important field and will become one of the major aspects of zoology and especially of ornithology. There is a wonderful opportunity existing for the coupling together of ethology and systematics. In spite of the retarding circumstances, the above example of the head-scratching patterns does add a little weight to the revival of *Eolophus*.



Distribution of *Eolophus roseicapilla*.

From within the Galah's distribution, which includes most of the interior of the continent, five subspecies have been described. *Eolophus roseicapilla roseicapilla*, the typical race, inhabits the eastern areas and is the most familiar form.

Mathews, in 1911, tabulated *Eolophus roseicapilla kuhli* from a specimen taken on South Alligator River, Northern Territory. This race differs

from the typical form in its overall paler colouration and in having the whole crest strongly suffused with pink. The following two subspecies have been incorporated into the western race. The smaller size of this bird as mentioned by Mathews is negligible.

Eolophus roseicapilla assimilis was also described by Mathews in 1911 from a specimen collected at Laverton, mid-western Australia. This race was said to differ from *E. r. roseicapilla* in its overall paler colouration and from *E. r. kuhli* in its larger size. It is synonymous with the above.

Mathews described yet another race in 1911 when a specimen collected in north-west Australia gave rise to *Eolophus roseicapilla derbyana* with its extremely pale colouration as the distinguishing factor. With the combining of all these races into the one subspecies, we have *E. r. kuhli* with the range of the western parts of the continent.

With *E. r. kuhli* of the west meeting the typical race in Central Australia we have a large area inhabited by intermediate birds. It was from within this area between Claraville and Ruby Gay that S. A. White collected a specimen on 12th September, 1913. Mathews, on examining the specimen, tabulated, in 1917, *Eolophus roseicapilla howei*. This race was reported to differ from the typical race in having a much paler plumage with the grey being of a bluer shade, while the under surface was paler than in *E. r. kuhli*. This paler colouration of the underparts is often similar to that of the birds of the north-west. The author cannot justify the general acceptance of this variation and advocates its dismissal. The overall situation of two good subspecies inhabiting the east and west respectively and an area of gradation in the centre is thus reached.

General Discussion

Mother nature was indeed generous to the Galah, endowing it with a rich plumage of pink and grey blended together in a most appealing manner. The rose-pink underparts are exhibited to perfection by the contrast provided by the soft grey of back and wings. The white cap and recumbent crest complete this splendid colour scheme.

As mentioned previously, the Galah inhabits most of the interior of Australia. The inner areas of all the mainland states form the distribution range of this species. It has been accidentally introduced to Tasmania. This cockatoo is increasing in numbers and is rapidly extending its range. In parts of the Southern Highlands where it was a complete stranger a decade ago it is now common and is building up its population rapidly. The Nullarbor Plain, where these birds were previously considered as wanderers from the north, has seen an establishment of populations. However, owing to the lack of suitable nesting sites in this very arid region, there will undoubtedly be a movement of most birds found there. In times of severe drought *E. roseicapilla* visits the coastal areas, but this is not a common occurrence.

As would be expected from the nature of the range of this species, open forest, timber along rivers and watercourses, plains and desert country, and cultivated farmlands are the favourite haunts. Essentially a bird of the dry arid regions it has shown much adaptation in its extension to the colder regions of southern New South Wales. In this district the mountains are interspersed throughout with valleys and hills which have been cleared and opened up for grazing. This has been the cause of the Rose-breasted Cockatoo's invasion there, while the heavily-timbered mountainous country in other districts has been rejected. As with the Sulphur-crested Cockatoo, 3,800 feet appears to be the restricting altitude in the southern areas.

Most farms and properties have flocks of Galahs frequenting their pastures, crops and haystacks, searching for seeds and grain which form the bulk of their diet. Bulbous roots, greenfood and gum tips are the other main food items. The birds spend many hours in the morning and before dusk feeding on the ground, over which they move with their characteristic waddling gait. Occasionally a squabble will come about as two individuals meet. There will be a flapping of wings, a raising of the crest and a loud screech. The remainder of the flock will cease feeding and, with crests raised in alarm, investigate the commotion. When all is quiet the feeding will resume.

Unfortunately the feeding habits of this handsome bird make it a noxious pest in most districts. It will congregate in very large flocks and raid cereal crops causing considerable damage. Although not capable of as much destruction as *Cacatua galerita*, many Galahs are destroyed every year by pastoralists. They have not developed any warning system such as that used by the Sulphur-crested Cockatoo. When birds are shot the flock will take to the wing and settle at the other end of the paddock or in nearby trees often affording another opportunity for the farmer. However, when, as is often the case, they join forces with the Sulphur-crested Cockatoo they will always take advantage of that bird's sentinel system. As can be readily appreciated the damage caused when these two cockatoos congregate together can be very serious indeed. However, there is another weight on the balance and this species is most valuable in many areas in keeping numerous plant pests in check. The settlement of, and consequent provision of many new watering places in, outback areas has brought about an increase in the population of many birds, particularly the Galah. The seed-eating activities of these birds is an important adverse factor in the successful regeneration of Saltbush (*Atriplex vesicarium*). Flocks of these birds settle on an area and, after eating all the fallen seeds, attack the ripening fruits. The heavy seed-eating activities have been borne out by all the crop contents examined by the author. The crops of the two birds from Lockhart, N.S.W., contained seeds of grasses and grain with small pieces of grit and gravel, no doubt used to aid digestion.



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A Seasonal Watercourse in the Open Plains Country of Far North-western New South Wales : Haunt of *E. roseicapilla*.



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[Commonwealth Department of the Interior

A Small Flock of Galahs (*E. roseicapilla*) Resting in Eucalyptus Trees Near an Inland Watercourse.

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The collection of sand and grit on the country roads of Australia proves a fatal act for many birds as hundreds of Galahs are killed by motorists. It is by no means uncommon for a driver, on rounding a curve, to have a flock of these birds rise from the road in front of him screeching all the while.

The call of *E. roseicapilla* differs remarkably from that of *C. galerita* and other white cockatoos. It is very difficult to describe, but is best likened to a rather high-pitched double screech bordering on a cry. A single screech of a harsher tone is also often used, particularly when the bird is alarmed or excited. The call is one of the differences mentioned in the Systematic Discussion.

Another strong difference is provided by the flight of *E. roseicapilla*, which is unlike that of other white cockatoos. The flight of the Galah is laboured with slow full wing beats. The glide is used when coming to alight on a tree or on the ground but never forms part of the regular flight pattern. These beautiful cockatoos are very strong on the wing and are capable of much manoeuvring. While in flight they are at their best and their beauty excels. As the flock twists and turns the rays of the summer sun highlight first the rose-pink underparts and then the soft grey of the back. It is a most impressive spectacle. These birds seem to enjoy flying and after awakening in the early dawn the flocks spend some time flying through the trees which form their roost. The author will never forget a dawn scene on the banks of the Lachlan River at Balranald, N.S.W., in the summer of 1962. As the first rays of sunlight filtered through the large river gums, a large flock of Galahs, comprising approximately 500 birds, left its roost and weaved its way through the tall trees flashing pink then grey in the early dawn glow. The same routine is also followed at dusk before the birds go to roost.

Although relatively powerful in flight, the Galah often falls prey to the larger members of Falconiformes, particularly the majestic Wedge-tailed Eagle (*Aquila audax*) and the smaller, but fierce, Little Eagle (*Hieraaetus morphnoides*). Indeed there is a record of a Wedge-tailed Eagle rearing a brood entirely on Galahs. However, these appear to be the only natural enemies of this species, although the " goanna " takes many nestlings.

With the arrival of *E. roseicapilla* in the southern areas of eastern New South Wales field comparisons between the bird and the Gang-gang Cockatoo (*Callocephalan fimbriatum*) have become possible. One striking feature of these observations has been the remarkable similarity in the flight of both birds. Each species has the laboured flight and the tumbling movement. This, of course, does not mean that the two species are closely related but it does indicate that they may be closer than most authorities previously imagined.

Sexing is comparatively simple with *E. roseicapilla*. The males are heavier birds and are generally richer in plumage. However, the colour

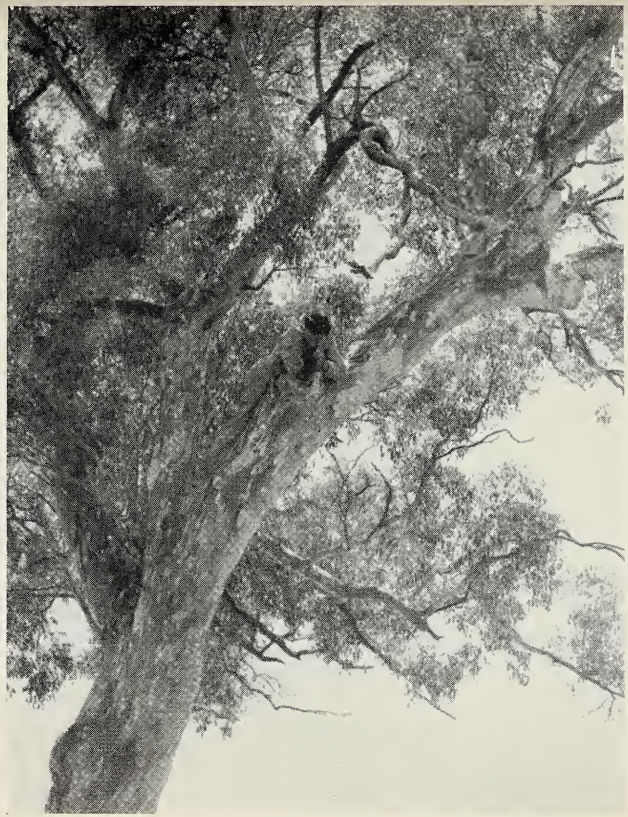
of both sexes deepens with age and this often upsets the comparisons. The male also has a larger head with a broader bill. The colour of the iris of the female is orange-red, while that of her mate is dark brown. The use of the combination of these distinctions rarely fails satisfactorily to differentiate the sexes. The Galah and the Major Mitchell Cockatoo (*Cacatua leadbeateri*) differ from the other cockatoos in having this sharp, clear difference in the colour of the iris.

The courting display of this species is simple but impressive. Aerobatics always form part of this display. The male struts towards the female along a branch. With crest raised and head bobbing to and fro he approaches uttering a soft wheezing call note. The female leaves the branch and wings her way through the trees and across the paddocks pursued by the persistent male. When she alights he repeats his display and succeeds in the preening of her nape before they take to the wing again. In no other species of white cockatoo does this aerial display form such an important part of courtship.

In selecting a nesting site the pair will inspect many hollow limbs and holes in tree trunks before the hen is satisfied. Usually the nesting site will be a hole in the trunk or main branch of a dead or living gum tree in close proximity to water. The birds will immediately commence to strip the bark from around the entrance thus exposing the smooth wood. This habit is peculiar to this species and there have been many theories put forward to explain this unusual behaviour, but none has been satisfactory. It has been suggested that the birds strip the bark from living trees to prevent " goannas " (*Varanus varius*) gaining access to the nest, but this does not seem to be the case as these reptiles can climb as easily over the smooth wood as they can over green bark. It has also been suggested that it is done to prevent the hollow entrance closing, but as most nests are in comparatively large hollows there rarely exists this danger. This habit of the Galah is one of those mysteries of ornithology that have not been solved.

With the exception of the Major Mitchell Cockatoo, the Galah is the only member of the white cockatoos that lines its nest. The bottom of the hollow is lined with a plentiful supply of gum leaves on which the eggs are laid. Occasionally more leaves are added after the eggs are laid and such a quantity of leaves is built up that the eggs are almost completely covered. *C. leadbeateri* does not use gum leaves but lines its nest with strips of bark.

The number of eggs varies from two to five and are laid over a period of up to a fortnight, Each egg is white and oval in shape with a fine slightly glossy surface. Eggs from a nest at Dry Plains, N.S.W. examined by the author on 13th October, 1962, gave the average measurements of 1·375 in. by 1·0 in. Incubation, which lasts approximately five weeks, usually commences after the laying of the first egg



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The Author Examines a Nest of the Galah at Dry Plains, Southern New South Wales.



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A Male Galah (*Eolophus roseicapilla*) at the Nesting Hollow.

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thus giving rise to disparity in ages of nestlings generally observed in the nests. Both sexes share the incubation, but the most work in this sphere is done by the female.

As expected, the breeding season varies greatly throughout the extensive range of this species. In the eastern and western areas it is from August to December while the central regions have the season from late June to November. In northern Australia, where the wet season is the deciding factor, the birds breed from May to August. In the central regions dry periods cause the birds to forego breeding altogether or to lay clutches well below normal in number, but in these same areas good seasons bring about an increase in clutches or in the number of broods.

Newly-hatched Galahs are naked and are nearly all head and bill. White down appears after a few days followed by the slow acquisition of pin feathers. Development is slow and the nestling period usually lasts from five to six weeks. Both parents share the duty of feeding the nestlings. The parents visit the nest together at approximately three-hourly intervals while the nestlings are young, the visits becoming less frequent as the birds progress and develop. While being fed the young emit a constant rasping, wheezy, call interspersed with a vibrating interrupted grating cry. When feeding her offspring the adult bird locks her bill with that of the young bird and, with a violent up and down jerking movement, passes regurgitated food to the youngster. It is this movement that is accompanied by the vibrating cry.

After leaving the nest the young birds are fed and preened by their parents in the roosting trees for the first couple of weeks. An integral part of the inland scene around December is the noise of young Galahs in the trees as they are fed by their parents. These young birds are readily distinguished from the adults by the grey markings on the underparts and crest, giving them a somewhat smeared appearance. Also their bills are usually yellowish in colour.

Although it frequently associates with the Little Corella (*Cacatua* or *Ducorpsius sanguinea*) along inland watercourses and creeks, the Galah does not often hybridize. There are scattered reports of hybrids between these two species and with the Major Mitchell Cockatoo occurring in the wild state. A most interesting record of a combination clutch comes from Minginew on the Irwin River, W.A., in 1927. Three young cockatoos at pin-feather stage taken from a nest proved to be two Major Mitchell Cockatoos and one Galah. Apparently the Galahs deserted the nest after laying one egg and the Major Mitchells took over and hatched the Galah's egg with their own.

A mutation in which the grey of the upper parts is replaced by white has been the subject of a number of observations both in the wild state and in captivity. The author observed one of these birds in captivity in Adelaide in 1962 and was greatly impressed with its beauty. The bird

which had all the underparts normally coloured and the upper surface and tail pure white, had been trapped in the north of South Australia. There are also records of mutations in which the pink is replaced by white while the grey is retained.

Although an extremely popular cage bird in this country, the Galah, because of its abundance, is rarely kept in an aviary with a view to breeding. When hand-reared from nestling stage it makes a most affectionate pet and, in spite of many statements to the contrary, will often become quite proficient as a " talker ". Its voice, although often quite irritating, is not as disagreeable as that of the Sulphur-crested Cockatoo and this is a big factor in its favour. Because of its quieter disposition *E. roseicapilla* is in demand overseas as an aviary bird. It has been bred in captivity on a number of occasions and once acclimatized is very hardy. However, aviary-bred birds are delicate and very susceptible to chills for the first six months and reasonable care should be excercised. If breeding in captivity large hollow logs or nest-boxes should prove suitable. There is a record of aviary birds stripping slivers of wood from perches to make a nest at the bottom of the box, but usually they will be satisfied with decayed wood on which to deposit the eggs.

The diet of captive birds should consist of oats, wheat, sunflower seeds, and cracked corn in equal parts with a little millet and plain canary seed for variety. Milk thistle, chickweed, lettuce and silverbeet will provide the essential greenfood, while fruit will be readily taken.

One of the most abundant of all Australian birds, the Galah provides colour and beauty to the vast inland areas of Australia. Whether turning and tumbling in flight thus displaying the plumage to perfection, or spending their idle hours stripping gum tips as they roost by outback watercourses, these handsome birds never fail to fascinate the observer. Such is the charm of yet another of Australia's wonderful psittacine birds.

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(To be continued)

* * *

NEWS FROM CHESTER ZOO

By A. W. E. FLETCHER

As these notes are written in the first week of May, it is far too early to give much news of breeding. It can be reported, however, that both the Great and Spotted Eagle-Owls again have well-grown young ones—four in the case of the former and three in the case of the latter. Two of last year's young Spotted Eagle-Owls have laid, but as both birds are incubating, they must be two hens. There are a number of other possibilities but they will have to wait for a later number of the MAGAZINE.

A number of interesting new arrivals are now on view, including several new to the collection. The penguins have been increased by four Humboldt's Penguins and four King Penguins. The latter were somewhat reluctant to feed on first arrival and two had to be forcibly persuaded. They now seem to have settled down well. It is interesting to note that in captivity King Penguins never learn to pick up their fish, either on land or in the water. They always take them from their keeper's hand. The smaller species, although they may have to be hand-fed when first captured, very soon learn to pick fish up off the ground or out of the water.

Our three American White Pelicans have been joined by two Brown Pelicans, two Rosy-breasted Pelicans, and a Crested Pelican, and the eight make up quite an impressive flock. They share the penguin enclosure, which now has a very well-filled look.

Of birds of prey, two immature vultures sent to us as White-backed are almost certainly White-headed. Very tame birds, they have evidently been hand-reared from the nest. They have settled in with the rest of the birds of prey with no trouble. It is somewhat surprising that quite large numbers of the raptors can be kept together with very little fighting, provided that really roomy quarters are available. Presumably it is because of mutual respect.

The arrival of Demoiselle Cranes has increased the number of species of these attractive and spectacular birds at Chester to four. In the large enclosures in which they are housed they can be seen at their best. They are something of a worry in a high wind, as most are wing-clipped and not permanently pinioned. In addition to the Demoiselles we have received a very nice young pair of Sarus Cranes.

* * *

LONDON ZOO NOTES

By J. J. Yealland

Two African birds of prey, new to the collection, have been presented—a Wahlberg's Eagle (*Aquila wahlbergi*) and a Grasshopper Buzzard (*Butastur rufipennis*).

When Mr. J. O. D'eath made a second tour of East Africa during the winter in order to photograph birds and mammals, he also visited some game trappers' establishments and as a result six Vulturine Guineafowl, four Beautiful Sunbirds (*Nectarinia pulchella melanogaster*), and four Variable or Falkenstein's Sunbirds (*Cinnyris venustus falkensteini*) have been received here together with two Hartlaub's Turacos that he kindly presented.

Other presentations include an Abyssinian Lanner (*Falco biarmicus abyssinicus*), three Green Pheasants (*Phasianus versicolor*), a Common Hangnest, and four Indian White-eyes.

Birds bred in the Gardens include three Black Swans, two Greenland White-fronted Geese, an Erckel's Francolin, four Kenya Eagle-Owls (*Bubo capensis mackinderi*), two Spotted Eagle-Owls, two Great Eagle-Owls, a Snowy Owl, two Crested Pigeons, and two Superb Glossy Starlings.

A pair of Black Duck (*Anas rubripes*) and a Purple-crested Turaco have been received in exchange.

A Second Australian Collection

In 1954 Sir Edward Hallstrom was instrumental in collecting together and sending a large collection of Australian mammals, birds, and reptiles (*Avicult. Mag.*, 1954, lx, p. 90). These were shown in Regent's Park as a special exhibit and, of course, many of them are still living.

In May of this year another of these characteristically generous gifts was sent to mark the occasion of the recent Royal visit. This time the collection travelled by air under the care of Mr. F. Hargreaves and the specimens are being exhibited at Whipsnade Park until the autumn.

The birds came from Sir Edward's private collection, from Taronga Park, and from the Adelaide Zoo, many of them having been bred at these places.

The collection of birds comprises eighty-seven specimens of the following species : Bennett's Cassowary, Black Swan, Cereopsis Goose, Magpie Goose, Maned Goose, Eyton's Whistling Duck, Black Duck (*A. superciliosa*), Grey Teal, Nankeen Kestrel, Yellow-tailed (Funereal) Cockatoo, Gang-gang Cockatoo, Leadbeater's Cockatoo, Sulphur-crested Cockatoo, Roseate (Galah) Cockatoo, Slender-billed and Bare-eyed Cockatoos, Pileated, Hooded, Red-rumped, Blue-bonnet, Crimson-winged, King, Black-tailed, Princess of Wales', Cloncurry, Pennant's, Blue-cheeked and Mealy Rosella, Splendid and Bourke's Parrakeets, Crested Pigeon, Apostle Bird (Grey Struthidea), and Black-backed Magpie or Piping Crow.

The Bennett's Cassowary is, I believe, of the race inhabiting the Nondugl area in the highlands of eastern New Guinea, one being caught as a chick and the other being bred in Taronga Park in 1959.

The Cloncurry Parrakeet (*Platycercus zonarius macgillivrayi*) has never before been in the collection. It was previously imported in 1939 by the late Duke of Bedford who published a note on it in the MAGAZINE that year, calling it the Cloncurry Barnard. In the same volume Dr. Alan Lendon also wrote on it and there appeared an excellent coloured plate by Goodchild which was originally published in *The Ibis* in 1902, two years after North had first described the bird.

The Blue-cheeked Parakeet is, of course, the northern race of *Platycercus adscitus*.

* * *

BRITISH AVICULTURISTS' CLUB

Dinners and meetings during the 1963–64 session have been arranged for the following dates :

Monday, 16th September, 1963.
,, 11th November, 1963.
,, 13th January, 1964.
,, 9th March, 1964.

The dinners will be held at the Windsor Hotel, Lancaster Gate, London, W. 2.

ARTHUR A. PRESTWICH,
Hon. Secretary.

NEWS AND VIEWS

The Bronze Medal of the Avicultural Society of South Australia has been awarded to Bev Thomas, for the first breeding of the Grey Butcher-bird *Cracticus torquatus*.

* * *

Conservationists everywhere are bitterly disappointed because the Whooping Crane has suffered a severe setback. Only thirty-two adults, with no young, arrived at the winter refuge in Texas. Last year thirty-eight returned.

* * *

Of all our members, Peter Scott must surely be the most versatile. His latest achievement is to become the 1963 British Gliding Champion, by winning the National Gliding Championships at Lasham, Hants, in his glider " Blue Goose ".

* * *

Charles Everitt reports from the Edward Marshall Boehm aviaries at the beginning of May : " We have certainly gone off with a bang this year, and the weather looks as though it is going to be kind to us. First results are :—

Masked Wood Swallow—chick independent.
White-cheeked Touraco—chick in the nest.
Fairy Bluebird—chicks in the nest.
Red-eyed Bulbul—eggs.
Orange-breasted Cotinga—eggs.
Black-headed Oriole—eggs."

* * *

It is indeed sad to read in *Oryx*, April, 1963, that the Japanese White Stork *Ciconia ciconia boyciana* is on the very verge of extinction. In 1958 Dr. Yamashina reported that only twenty-one remained. Now Dr. T. H. Bassett reports that in December, 1962, only thirteen birds are left. The last young one was reared three years ago, since when it is probable that only infertile eggs have been laid. Dr. Bassett also reports on the Japanese or Manchurian Crane *Grus japonensis*. This species is carefully preserved on the north island of Hokkaido. A recent census put the total for the whole crane population at 186.

* * *

The *Annual Report*, 1962, of the Royal Zoological Society of Scotland, as usual, contains details of the interesting events in the Edinburgh Zoological Park. Seven Gentoo Penguin chicks were successfully reared to adult plumage, and six King chicks are thriving. One of

the six having been deserted by its parents was reared by hand. The free-flying colony of Night Herons continues to maintain its numbers. " Five nests were occupied during the year and five broods successfully reared. . . . From young seen being fed by the parents, these broods should have added fourteen or fifteen birds to the colony strength, assessed at about forty herons."

The Kiwi, presented by the Zoological Gardens of Wellington City Council, New Zealand, which arrived in November, 1961, continues to thrive.

* * *

Walther Langberg, Copenhagen, writes at the end of May : " At present the Princess of Wales have five youngsters in the nest-box, and three pairs of Crimson-winged have a total of ten young ones in the boxes. Splendids, Turquoisines, and Bourkes have young and more pairs are laying at the moment, so I hope for a good number reared. My blue Ring-necked paired to a split-blue cock laid three eggs, but I regret to say they were all clear. The hen has, however, been in the nest-box today and I think she will go to nest again.

A fortnight ago I put my two 1956-bred Grey Parrots in the old Grey Parrot aviary and I very much hope they will breed this year."

* * *

Vice-President Allen Silver kindly amends my note on the Citril Finch in the last number of the MAGAZINE. He writes : " It is not only possible but was a fact that Teschemaker bred this species. I purchased the adults and their four young from him and passed them on to the late Professor Bateson and his niece Miss Florence Durham, then keenly interested in canary genetics. They came over to Streatham, where I then lived, to collect the birds and have a chat. They thought there might be some other finch in the origin of domestic canaries but I politely disagreed. I said I thought they could get fertile eggs from Citril Finch male and domestic canary, but that the hybrid would be infertile should they get so far. The Professor was a nice old boy and Director of the John Innes Horticultural Station, then at Merton Park, near Wimbledon. I later heard nothing as to how the birds fared, but suspect they lost them in due course as they were not experienced bird-keepers. I am afraid if caged and treated exactly as canaries they would sooner or later lose them."

* * *

Dr. S. B. Kendall writes : " I thought I would let you have a note about what at the moment (4th June) seems to be an astonishing good year with my cockatoos. At the time of writing I have :—

Roseate, three well-feathered young in the nest.

Citron-crested, one pair with two young and a second pair sitting.

Timor (Dwarf Sulphur-crested), one pair sitting and, most remarkable of all, two hybrid Leadbeater's ♂ × Citron-crested ♀. These have only just hatched (one Sunday and one today) and I believe they are being fed. We are delightedly speculating what colour they may be. The hen Citron-crested is one of my own breeding. She is now five years old but I am almost certain she laid, in a mixed aviary, when only three years of age. The Roseates, incidentally, were double-brooded in both 1961 and 1962.

Another thing that pleased me last year was that after very many years' perseverance one pair of Plum-headed successfully reared three fine young which came through the winter and are now moulting into grey heads. This year the parents have hatched again and I think all goes well."

* * *

The Dartford Warbler *Sylvia undata dartfordiensis*, as its name implies, was originally closely associated with Dartford, Kent. It was first brought to the notice of ornithologists when a pair was killed on Bexley Heath, not far from Dartford, on 10th April, 1773. They were sent to John Latham who communicated the discovery to Pennant, by whom the species was described and figured in 1776.

A very local species, its numbers have greatly decreased during recent years, mainly due to the destruction by burning-off of the heaths and gorse-covered commons that are its habitat. The very severe past winter must have taken a terrible toll and the species must be in serious danger of extinction. In captivity it is worth recalling that in 1909 the late John Frostick succeeded in hand-rearing a nest of three. One he succeeded in keeping in perfect health for nearly nine years. This bird—" Champion Perfection "—shown at all the leading London shows, probably created a record for the number of " firsts " and specials won by a single bird. Incidentally, a nest-brother was claimed at the Crystal Palace Show for twelve guineas, at that time a record price for a small, British insectivorous bird.

On the death of John Frostick in 1946 his son William very kindly gave me " Champion Perfection " and it is before me as I write—a treasured reminder of a very great bird-lover.

* * *

Charles Lucas, President, Avicultural Society of Australia, reports :

" During the past season I had some good and some poor results. The Princess Alexandra Parrakeets are my favourites and although from six pairs I got eight young birds only, I had the misfortune to lose two of these later on. The result which gave me the most satisfaction was the breeding of three young Crimson-winged Parrakeets although tragedy befell me in regard to them this last week. They came out of the log in December last and were finger tame from the

beginning. They were delightful birds but unfortunately about ten days ago they all got something which did not agree with them and "went light" and I lost the three of them over the last few days. The cock bird of the pair also was afflicted and I now have him in a cage and am dosing him up in the hope of saving him, but he looks pretty weak at the present time. He is in beautiful feather and I shall be very sorry if I lose him. These were a first breeding for me as was a young Barraband. My Spinifex Pigeons did not breed this year but I got about ten Scarlets, about fifteen Bourkes, four Turquoisines, four Green-winged Pigeons and sundry finches, including eleven Red-faced Parrot Finches which also was a particularly pleasing result. During the year I secured a pair of Swinhoe's Pheasants and, although these birds were extremely wild when I got them, they tamed down very well and went to nest. As I have had unfortunate experiences with hen pheasants brooding before, I took half the eggs from her and put them under a bantam, but the bantam died about a week before they were due to hatch. However, the hen Swinhoe's got on with the job on the six eggs that she had under her and brought out three young, all of which came on well and are now almost adult."

* * *

John A. Fell, Victoria, Australia, sends the following breeding notes : "Although I cannot say that the past breeding season was a particularly good one it was, nevertheless, an instructive and interesting one. The young reared were : Peach-faced Lovebird, thirty ; Nyasa Lovebird, eleven ; wild, green Budgerigar, nineteen ; Pale-headed Rosella, two ; Yellow Rosella, two ; Crimson Rosella, one ; Adelaide × Yellow Rosella, two ; Green × Yellow Rosella, two ; Red-rumped, three ; Many-coloured, one ; Cockatiel, five ; Turquoisine, thirteen ; Blue-winged, three ; Scarlet-chested, four ; Elegant, two ; Bar-shouldered Dove, three ; Crested Pigeon, two ; Ring-necked Dove, five ; White Dove, one ; Diamond Dove, normal six, silver four, split-silver five ; Indian Lace-necked Dove, one ; Peaceful Dove, two ; and eleven Californian Quail were reared from eggs given to me by a friend.

One of the five young Cockatiels was fostered out and fully reared by Budgerigars.

The four Scarlet-chested Parrakeets were reared by Redrumps. The hen Scarlet unfortunately escaped when her young were less than ten days old and she disappeared immediately.

The young Many-coloured was also reared by Redrumps. The cock Many-coloured was killed and the hen refused to incubate. The eggs were shuffled around under Redrumps, Nyasa Lovebirds, and Budgerigars where they finally hatched. The Budgerigars, however, killed all except one which I gave to a hen Redrump that had just finished

laying. She accepted it along with the four Scarlets a week later and reared the lot. Her one and only fertile egg and youngster was reared by Blue-wings.

Another hen Redrump was killed, her eggs did the rounds finally ending-up under a hen Eastern Rosella whose own eggs were addled, and two young were reared.

The Crimson Rosellas let their young ones die as they hatched. Only one, the last, was I able to save by giving it to a pair of Golden-mantled Rosellas whose own eggs were infertile. The Peach-faced Lovebirds did exceptionally well, my best pair reared seventeen in ten months.

One pair of the wild, green Budgerigars is interesting in that they reared three broods, five, four, and four. Yet in the wild, before they were caught for me, this pair only had two young."

* * *

Notes from Chester Zoo. A. W. E. Fletcher writes : " Two recent happenings at the Zoo may prove of interest. The first is an example of the way pairs in breeding condition are aggressive to birds of similar colour patterns. Our American Black Vultures share the large Birds of Prey Flight with Griffon, White-backed and White-headed Vultures, Bateleur and Fish-Eagles, Buzzards, Ravens, and a Crested Hawk-Eagle. On coming into breeding condition, the Black Vultures persecuted the Hawk-Eagle to such a degree that it had to be caught up to save its life. Curiously enough they ignore the Ravens, although the latter are the biggest obstacle to their successful breeding. Does this mean that both species and colour must be allied in order to provoke aggression ?

The second quite interesting occurrence concerns three immature Silver Pheasant cocks. Having nowhere else to put them, I had one wing clipped and put them into a two-acre enclosure with eight Black-necked and Grey-necked Crowned Cranes, and a pair of Black Swans. After a few days the pheasants began wildly to chase the cranes and this finally got so bad that they had to be caught up. During this operation I saw a pheasant swim for the first time ! The sequel is rather interesting. I was reading the *Avicult. Mag.*, 1907, last evening and was intrigued by an account of a Swinhoe's × Silver Pheasant cock attacking and seriously injuring a Crowned Crane. As the French say : ' The more things change, the more they remain the same ! ' "

The event to which Mr. Fletcher refers is recounted by Mrs. Octavia Gregory. She writes : " I have lately introduced amongst my Cranes a handsome Swinhoe's × Silver cock Pheasant. He is quite tame and has been accustomed to run loose in a garden. A few days ago this bird suddenly rushed at my Crowned Crane and after chasing him up and down the garden managed to get his spur into the Crane's hind

toe and nearly severed it off. It bled very freely so I caught up the Crane and bathed and bandaged the foot, which bandage I may say he never attempted to peck off but walked about quietly in it for three days when the wound having healed he pulled it off—and the toe is well—but the nail has come off. Since, the Pheasant has tried to attack two male Demoiselle Cranes, but they are so quick, they got out of his way. Afterwards, he tried to get at my Flamingo which fortunately was standing in deep water. The Pheasant flew on to some rocks in the pond and I quite expected to see him swimming in the water. At last I got him into a run, where I shall keep him shut up. . . ."

* * *

A very interesting event last year in the Edinburgh Zoo was the successful breeding of a pair of Corncrakes that had been hand-reared and presented to the Park by our member, H. F. Gruber. The *Annual Report* describes the success : " During the early part of the summer the male bird was heard calling continuously during the night, a strangely rural sound for a Zoological Park, and later it was discovered that the female had formed a shallow nest and laid six eggs. The birds were disturbed as seldom as possible, and the female finally appeared with six chicks which, with some help from the male, she fed and brooded solicitously. Unfortunately, the only accommodation available was one of the outside aviaries south of the Tropical Bird House, and although this contained shrubs, and the grass was allowed to grow for increased cover, the area was insufficient and the birds were able to hide only by remaining at the end farthest from the visitors' path. This sufficed for the adults that were able to run into cover when frightened, but it proved inadequate for a mother with young chicks, and four of them were found dead at the foot of the netting close to the public path. It is surmised that the mother had been feeding them when surprised by someone passing. Retiring hurriedly to the undergrowth, she had been followed by two chicks while four remained and, presumably, died from exposure. Given a larger enclosure with plenty of cover, this might well have been prevented. . . . "

This event is not, however, unique. J. Lewis Bonhote, of Cambridge, was successful in 1896. He describes the event in the *Avicult. Mag.*, 1896, 179. Eight eggs were laid and all hatched. Five of the young ones died during the third week but, the account says, " two of them are now seven weeks old and fully feathered birds." (See also 1898, 51.) From Bonhote's accounts in the *Zoologist*, 1897, 35 ; 1900, 29, it appears that the parents were hand-reared, wild-taken birds of the previous year.

A further success is that of G. E. Rattigan, Gloucestershire. Six young, three males and three females, were reared in 1915. He gives a breeding account in *Bird Notes*, 1916, 28, 58.

Tailpiece.

Washing a Parrot

"Senhora Rocheta, wife of the Portuguese Ambassador, gave me some advice yesterday on how to wash a parrot.

Her pet, a brilliant yellow Brazilian macaw named Rial Grandesa, gathers dust as it flies from one Gobelins to another during its daily exercise.

But, contrary to the belief that parrots like only dust baths, Rial Grandesa revels in warm water and allows its feathers to be washed with toilet soap.

The drying process consists of sitting on Senhora Rocheta's shoulder and watching television.

Rial Grandesa has no small talk, though."

Daily Telegraph, 17th April, 1963.

A. A. P.

* * *

CORRESPONDENCE

SOLUBILITY OF TURACIN

The query in lines 12 and 13 from the bottom of p. 25 of *Avicult. Mag.*, Jan.–Feb., 1963, was answered in *Ibis*, 1938, 664–6. Turacin is quite insoluble in water that is acid, however slightly, barely soluble at all in distilled water, but very readily soluble in water to which a drop of ammonia or a trace of sodium carbonate has been added.

R. E. Moreau.

Edward Grey Institute of Field Ornithology,
(Department of Zoological Field Studies, Oxford University),
Botanic Garden,
Oxford.

* * *

CORRIGENDUM

The caption to the sketch in p. 115 in the May–June Avicultural Magazine should read "Captive *Red*-billed Oxpecker . . ." not ". . . *Yellow*-billed Oxpecker . . .".

* * *

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3½ lb.	11/9	3½ lb.	13/6	3½ lb.	13/6	3½ lb.	21/–	3½ lb.	15/–
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Amazilia verticalis

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Tacazze Sunbird
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AVICULTURAL MAGAZINE



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Didric Cuckoo.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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THE DIDRIC CUCKOO

(Chrysococcyx caprius)

By J. J. YEALLAND (London, England)

The Didric Cuckoo, so named from its call, inhabits Africa southward of the Sahara, islands near the coast, and southern parts of Arabia. It frequents a wide variety of habitat and is said to be migratory in most parts of its range, being, for example, only in South Africa from about October to March which is its breeding season in this area.

The coloured plate depicts a male ; the female differs in being a rather duller coppery-green above, no central white streak on the head, not such a pure white on the breast and throat and with more barring on the under side.

The food consists largely of caterpillars, with some moths, butterflies, and other large insects.

Mackworth-Praed and Grant describe the bird's thoroughness in its search for caterpillars, its habit of sometimes sitting lengthwise on a branch like a Nightjar and that " like all the metallic Cuckoos, often feed young birds of their own species after they have left the nest of their foster parents ".

A wide range of birds known to be parasitized by this cuckoo—twenty-eight species, according to Bannerman—include Weavers, Sparrows, Flycatchers, Cisticolas, Sunbirds, and Wagtails. The egg is evidently sometimes deposited in the nest by the mouth, Levaillant having shot two females in the act of doing this. Generally only one egg is deposited in a nest, but two have sometimes been found. The eggs are variable in colour, some being white, greenish-white or pale-blue, with or without variously coloured spots or blotches. The nestling cuckoo evidently ejects its foster brethren.

So far as is known, this, like others of the genus, has rarely been kept in captivity and with scant success. Some years ago Mr. R. C. J. Sawyer had a specimen, but found it a difficult subject and evidently unsuited to captivity both by reason of diet and of temperament.

HALF-LIBERTY JENDAYA CONURES

(*Eupsittula jendaya*)

By JORGE O'NEILL (Lisbon, Portugal)

To begin with I will point out that I call " half-liberty birds " the maintenance of birds in relatively small aviaries (8 to 10 feet length) with the possibility of flying in freedom every day, but returning at night to their aviary.

Eight years ago—in 1955—I bought a pair of Jendayas because of their gaudy colours. Although I knew they were very noisy, I was not prepared for their terrific cries. I put them in an aviary I have in my garden mounted under a stone stairway. This aviary is 4 or 5 feet in length by 8 feet high, dimensions not, of course, very suitable for breeding purposes.

Due to their terrific din I decided to try them flying at liberty according to the ideas expounded in the late Duke of Bedford's book. For this purpose I made a trap-door on the front side of the aviary and I placed a funnel with suitable dimensions, beside this trap-door.

First I caught one of the birds and, leaving the other inside the aviary, I set it free in my garden. I was immediately pleased with the results not only because these birds have a marvellous flight, but also because the flying bird's strong cry brought an immediate response from the one inside the aviary and I saw there wasn't any danger of losing the free bird.

I must say that these birds are very clever, and on the first day, the bird set at liberty learnt to get inside through the net funnel simply with the help of some sunflower seeds put in the middle of this funnel. For two or three days I set the same bird at liberty and on the second or third day it began to use the entrance quite normally. Then I did the same with its companion. A week after my experiment the two birds were both flying at liberty and they returned regularly to the aviary to feed and at nightfall.

At the end of several months—in September, 1956—(during which only once or twice they did not return for the night) the shooting season of the Turtle-Doves opened (1st September) and after a few days being in my garden, I heard a shot in the late afternoon and seconds later one of my Jendayas came flying hurriedly into the aviary and I never saw the other bird again.

It was clear that a very unscrupulous " sportsman " had killed it, to increase his bag with an exotic victim which certainly he had never seen before. I was of course very annoyed with this but quite by chance a bird shop in Lisbon had half a dozen Jendayas for sale and being convinced that the survivor was a cock, I tried to buy a new bird with

a thinner head hoping that it might be a hen. And a hen it was. This bird learnt with the same ease to get in and out of the aviary.

During the next year—1957—when the winter arrived I decided to put a log in their small aviary but more with the idea of a place for them to roost in than for breeding purposes. This log was simply part of an orange tree with a natural hole and 10 inches in diameter. I was surprised to see the hen entering it and staying a long time inside. When the gardener opened the trap-door every morning the two birds came out immediately, but the hen only took a brief flight round the garden and came back to the nest. After about three weeks the hen began to come out more frequently and approximately one month after this, two chicks appeared in perfect plumage. When these birds come out of the nest they are a little smaller than their parents. The breast and neck which in the parents is orange-yellow is more lemon-yellow and sprinkled with green. Within two months these birds were also flying at liberty.

The following year—1958—the old pair again raised four chicks. I gave two of these birds to a friend and remained with six in the aviary.

In 1959 four chicks were born. Two of these were lost, I think because I set them at liberty too soon. Two others died. They were found clutching the net tightly and badly injured. Again six birds in the aviary. In the summer another " sportsman " killed one of the parents as I forgot to lock them in due time. But there was a new breeding the following season—1960—between the parent that survived and one of its children and one chick was born.

In 1961—three chicks were again born and something happened which convinced me that the former birds were killed by their parents or brothers. One of the birds from last year's breeding was savagely attacked by two or three of its companions. The gardener saw the accident in time and seized the badly injured bird which had fallen on the ground. I put it in a small cage and some days later, I set it at liberty. It went to its parents' aviary and was again attacked. It was saved again and after having it a whole month in a cage I set it free once more. On this occasion the bird flew for a while in the garden but did not return to the cage and disappeared, probably in search of better company. From this incident I concluded that perhaps because the aviary is not big enough, or for some other reason, these birds sometimes attack one another fiercely. The birds previously found dead were probably not killed by rats as I then suspected, but simply killed by some members of their family. That is really probable as the birds were found with deep wounds, but not gnawed. Now I do not keep more than six birds in my aviary.

It seems to me that this experiment with the Jendayas has some interest. My property is composed of a garden 30 yards by 60 yards and an orange grove of approximately 30 acres. This part of the

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property is relatively narrow with an average width of 500 yards. I am convinced that in the country anybody possessing an aviary of small dimensions and a garden with not more than one acre can have these birds flying at liberty and breeding in an aviary. They are easy to teach and although their cries are very disagreeable in the aviary, they are almost gay when the birds are flying, and the noise makes them easy to locate. They are wonderful on the wing, sometimes a little reminiscent of Snipe. Their colouring is : head, yellow ; breast, orange ; mantle, green ; wings and tail, green with blue tips.

The end of this story is not a very happy one however. Last year—1962—I decided to keep only four birds and gave the rest away ; one died in the nest, one accidentally, and a third one did not come back, presumably again killed by some " sportsman ". At present I have only one bird flying about in my garden.

As to other birds, I only keep parrot-like birds.

At present for breeding purposes, I have :—

Three pairs of lutino Ring-necks
Four pairs of Pennant's
Four pairs Red-collared Lorikeets, living in a colony
Eight pairs blue pied Budgerigars.

This season I was successful with the lutinos, seven chicks from two pairs (the third pair is one year old and did not breed), and with the Lorikeets : two pairs. These birds are very regular breeders.

Two pairs of Pennant's are in the nest, I know not with what results. For various reasons I am not very confident with them for success this year. I had a good breeding season with my Pennant's last year : six chicks.

SOME BEHAVIOUR CHARACTERS OF THE BABBLERS

(Timaliidae)

By K. E. L. Simmons (Ascension Island)

Introduction

The babblers have long presented taxonomic difficulties, not only as regards their internal composition but also the systematic position of the group itself among the other passerines.

For many years the babblers have been treated as a " rag-bag " family. A large measure of order was given it, however, by Delacour (1946, 1950) but, though the core of typical babblers is now well known, it still remains doubtful if the group as presently constituted is a wholly monophyletic one. There has been a wide divergence of opinion, also, as to the status and relationships of the babblers. Some authorities, such as Amadon (1957), van Tyne and Berger (1959), Storer (1960), and Wetmore (1960), still give them full family rank, the Timaliidae, but the prevailing trend is to place them as a subfamily, the Timaliinae, within the great thrush-warbler-flycatcher assemblage, the Muscicapidae *sens lat.* (Mayr, 1946, Mayr and Amadon 1951, Mary and Greenway, 1956, and Delacour and Vaurie, 1957). Few taxonomists indicate that the relationship of the babblers may lie elsewhere, though the order of both Wetmore (1960) and of van Tyne and Berger (1959), for example, could imply a closer affinity with that looser assemblage of families centred about the crows (Corvidae), notably the bowerbirds (Ptilonorhynchidae), birds of paradise (Paradisaeidae), tits (Paridae), nuthatches (Sittidae), and creepers (Certhiidae).

To a greater or lesser extent, all these problems are still greatly debatable and much reliance has been placed on purely morphological evidence. During the course of recent studies on head-scratching (Simmons, 1957*a*, 1961*a*) and on anting (Simmons, 1957*b*, 1959, 1961*b*), I was able to make some observations on the general behaviour of babblers and of other passerines in captivity, mainly in the London Zoo. In addition, I have kept Pekin Robins (*Leiothrix lutea*) for a number of years and recently had a pair of Rufous-chinned Jay-Thrushes (*Garrulax rofogularis*) for a year (Simmons, 1962, Harrison, 1962). The notes thus gathered, plus some further information from the literature, indicate that the babblers have several characteristic traits of behaviour which should be considered in any future assessment of their taxonomic composition and relationships. This paper presents an informal and preliminary treatment of these problems.

The Characters

Writing in the Avicultural Magazine, Delacour (1925) described the babblers as insectivorous and frugivorous birds, inhabiting Africa and Asia, related to the thrushes and warblers and distinguished by their short and rounded wings and tendency towards a longer tail and stouter legs. He mentioned their rapid movements and their manner of progressing on the ground by large hops.

Diet, manner of gait and flight, nesting habits, voice, and display are outside the scope of the present paper, though probably all worth examining in detail in any full review of the Timaliidae. Indeed, as regards display, little seems to have been recorded and I have only once seen any elaborate display in a babbler, the Pekin Robin ; this was of such unique form for a passerine (see review by Andrew, 1961) that I give a description of it in an appendix.

My own interest in the babblers was taken chiefly by unusual features of their routine behaviour, including " feather maintenance " (Simmons, *in press*) and, while most or all of the behaviour characters to be discussed are to be found in other groups, their peculiar combination within the Timaliidae is probably unique and of taxonomic value. The main items to be treated will be considered under the following heads : (1) use of the foot in feeding ; (2) manner of scratching the head and bill ; (3) mutual preening and other social behaviour ; (4) manner of bathing ; (5) manner of oiling the head and wings, and (6) prevalence and methods of anting. Of these, the first four are clear-cut, the last two less so and included only after much deliberation.

Use of the Foot in Feeding

The fossil evidence of avian evolution has firmly established that birds are descended from reptilian stock, having the same ancestors as the ill-fated dinosaurs. One should keep this origin in mind when considering the usually very limited ways in which birds use their feet, for we tend to overlook that these are the equivalent of the hind-limbs of reptiles, that is, mainly organs of locomotion and scratching. With the evolution of wings for flying, birds were left, as it were, without conventional, prehensile front limbs and very few species to-day employ their wings for even simple front-leg tasks.

In most passerine groups, the use of the feet is very restricted, being chiefly concerned with perching, locomotion, and head-scratching. Backward-scratching with both legs alternately is, however, widespread, though mainly confined to nest-shaping, House Sparrows (*Passer domesticus*) also using this co-ordination when forming hollows for dust-bathing (Simmons, 1954). A few species show forms of backward-scratching in their food-seeking, for example the Dunnock

(*Prunella modularis* : Prunellidae), Blackbird (*Turdus merula* : Turdidae), the scrub-birds (Altrichornithidae) and whydahs (Viduinae). The most specialized use of the feet, however, is connected with the holding of objects, most often food. Surprisingly few passerine groups have advanced this far and most instances are to be found in the non-passerines. The simplest pattern in this category is the employment of one or both feet merely to hold down and steady objects, so that the bird can bend down and deal with them with the bill. Within the passerines, the crows, tits, and the shrikes (Laniidae) are well known for using the feet in this manner and I have seen a Magnificent Bird of Paradise (*Diphyllodes magnificus*) hold an ant to its perch for re-adjustment during anting. The behaviour is unknown in the thrushes and their allies but is present in the babblers, though this seems not to be generally known outside avicultural circles.

I have seen babblers of the genera *Leiothrix*, *Siva*, *Heterophasia*, and *Garrulax* use the foot in feeding. Two main, inter-related, methods occur within the same species. The food may be held against a perch with the front three toes, while the hind toe grips the perch directly (clamping) or, usually on the ground, the bird may extend the tarsus and hold the food with all four toes, while its weight is taken by the other leg (grasping). The babblers are, perhaps, generally not so adroit at holding food in the feet as are, for example, the crows and the tits which, as well as employing the two methods just described, also clamp food to the perch with both feet and can with ease rotate and move objects along under the feet for better treatment. The Long-tailed Tit (*Aegithalos caudatus*) is known to eat prey while hanging upside down with one foot and grasping the prey with the other. However, the highest level of development has been reached by the drongos which, perhaps alone among the passerines, have achieved full emancipation of the hind limbs and are able to use them for grasping and holding food up to the bill as if they were hands. I have seen a Large Racket-tailed Drongo (*Dissemurus paradiseus*) grasp a cockroach in one foot and hold it up to its bill for eating.

Manner of Scratching the Head and Bill

The head parts are scratched with the claws of one foot while the bird supports itself on the other leg. There are two main ways in which birds move the foot up to the head for scratching. When scratching " indirectly ", the bird first makes the positive movement of slightly lowering one wing and then lifts the corresponding leg over the shoulder to the head, the co-ordination being a characteristic two-phase one. When scratching " directly ", the bird lifts the foot straight up without any special wing movement. In the great majority of cases, one method of head-scratching is a diagnostic feature of the species and its family.

It has long been known that the indirect method of head-scratching is characteristic of the passerines (see, for example, Finn, 1919) but not until comparatively recently that a minority of members of this order scratch directly. The record is still far from complete, and some cases are puzzling, yet it is clear that direct-scratching is widespread among the babblers whereas, as far as is known, all other groups with which they have been associated, including the thrush assemblage, regularly scratch indirectly in the typical passerine manner.

Of the birds listed as babblers by Delacour, the following genera are known to scratch directly (most records from Simmons, 1957*a*, 1961*a*) : *Pomatorhinus*, *Chamaea*, *Turdoides*, *Babax*, *Garrulax*, *Leiothrix*, *Siva*, and *Heterophasia*. The following, however, were found to scratch indirectly : *Paradoxornis*, *Yuhina*, and *Picathartes*. These and other instances are discussed in Simmons (1961*a*) while further papers on head-scratching include those of Ficken and Ficken (1958), Nice and Schantz (1959), Wickler (1961), and Brereton and Immelmann (1962). The latest general review on the subject is that of Nice (1962) and the position in the American warblers (Parulidae), the only other passerine group in which direct head-scratching seems to be fairly widespread, is summarized by Ficken and Ficken (1962).

Mutual Preening and other Social Behaviour

Most babblers are highly social birds. This sociability manifests itself in many ways. Not only do they often gather in parties and flocks, some species even co-operating in nesting activities and communal defence (Kendeigh, 1952) but, above all, they are " contact " birds. The majority of other passerines, even otherwise gregarious ones, are " distance " birds, that is each individual maintains a free space around itself and, except at special times (such as when mating or fighting), avoids bodily contact with its fellows, either by passively moving away from them or by showing mild aggression. Such a social convention is characteristic of the thrushes and their allies. The babblers, however, have no such inhibitions but, like a few other groups (notably the Estrilidae), freely clump together when perched during the day and roosting during the night. The Pekin Robin, the babbler most often kept in captivity, provides a good example. Paired birds sit side by side, often so tightly pressed together that they look like a single bird with two heads and two tails. The bodies, with feathers ruffled, form a single, fluffy ball, especially when the birds tuck their heads away to sleep. So strong is this tendency to clump in the babblers that, in captivity, birds of the same sex freely associate in this way while, in the absence of a bird of the same species, individuals will try to clump with other babblers or even with quite unrelated species, passerine and non-passerine.

Another social habit of the babblers, usually connected with

clumping, is mutual preening. This behaviour is otherwise rather rare in the passerines, being quite absent, apparently, in the thrush assemblage. The best-known protagonists, apart from the babblers, are the estrildine finches. I have seen mutual preening in several babbler species and, especially in my own captive Pekin Robins and Rufous-chinned Jay-thrushes which would clump for minutes on end, first one and then the other of the pair taking its turn to preen the other's head-parts. The chin and throat received special attention, the bird being preened remaining stock still, often with bill elevated vertically. Frequently, I noted that one bird would preen the other hurriedly for a few seconds, as if to encourage it, and then hold its own head in position, inviting attention in return.

As noted, the head-parts are the ones usually treated, and this seems to be the general rule among birds that mutually preen. In the London Zoo, however, I saw what might be best termed " vent preening " from a pair of Masked Jay-Thrushes (*Garrulax perspicillatus*). The two birds were in a small tree in their flight and one hopped near to, and slightly above the other, facing away from it and formally inviting it to preen its ventral area in a special posture. It remained quite motionless, body horizontal, tail somewhat cocked, the neck stretched, and the head up. The mate hopped eagerly forward and inspected the undersurface of the tail, pecking at the feathers and, apparently, the skin round the cloaca and also preening the feathers for nearly two minutes, swallowing from time to time. It then " extracted " a long length of stiff, thin, greyish material, which looked like a strip of vermicelli. For a moment, it held the stuff in its bill, then took it to the ground, dropped it, picked it up again and ate it. The Jay-Thrush returned immediately to its mate and went on preening its ventral area for a further minute or so. The other bird had kept quite still all the while.

I have no other records so complete as this one but some do indicate that vent-preening, or, at least, cloaca pecking, may occur in more than one species. I have twice noted a female Pekin Robin assume a posture that seemed to be an invitation to the male to preen her ventral area, stretching up the head and the tail, in the manner of the Masked Jay-thrush, and remaining motionless with the feathers round the vent raised. In neither case, however, did the male respond. On one occasion, I saw a White-throated Jay-Thrush (*Garrulax albogularis*) peck briefly at the vent of a White-browed Jay-Thrush (*G. sannio*), the latter bird remaining still while it did so. Another, different, case involved a Guira Cuckoo (*Guira guira*) which acted as a supernormal stimulus for mutual preening for the babblers caged with it. A Common Babbler (*Turdoides caudata*) followed the cuckoo around, persistently keeping under its long tail as it moved from place to place, though no preening of the ventral area was seen.

A further manifestation of babbler sociability is found in what has been termed " collective de-ticking ", a little-understood phenomenon recorded, for example, in the Large Grey Babbler (*Turdoides malcolmi*) and in the Jungle Babbler (*T. somervillei*). I can do no better than quote from Hutson (1956) :—

> The habit has been called a " de-ticking huddle " and it is possible that it is connected with the care of the plumage. In the case of the Large Grey Babbler you may come upon a band of these birds on the ground, on a sandy track perhaps, or in short grass. The birds are hunched together, jostling one another as they hop along. Some look as though they are indulging in mock fights. Others stand on the recumbent birds and peck at them, or appear to do so. Often the " huddle " takes place in a tree. A band feeding on the grass below will suddenly start flying up and collecting on a branch in one or two closely packed bunches, six to eight birds in each, some individuals on top of the others. As the birds reach the tree they join the " huddle " till all that can be seen is a feathery heap with tails sticking up in all directions. A " huddle " breaks up as abruptly as it is formed and the birds fly off with much clamour. Sometimes only a few of the birds in a band take part—at others the whole band is employed. The bird at the bottom of the pile lies there voluntarily and submits to the attentions of its companions without protest.

Finally, brief mention may be made of the " courtship feeding " between paired birds. I have seen this in at least one species of babbler, the White-throated Jay-Thrush, and it may occur widely in the Timaliidae.

Manner of Bathing

There are five main types of true bathing in passerine birds : (1) bathing while standing in shallow water ; (2) bathing by hopping in and out of the water ; (3) bathing from the air, usually in deep water, in a series of dips and rises ; (4) bathing in the rain, and (5) bathing in wet vegetation (rain or dew soaked).

Of these methods, the first is by far the most common and usually takes the following form. The bird stands throughout in the water, though it may change its position from time to time. It alternates rapidly between two sets of activities. First, it lowers the front of the body, with legs bent and tail more or less clear of the water. With the head and the front of the breast dipped into the water, it shakes its bill vigorously from side to side while both wings are flicked up and down. Then it raises the head and fore part of the body and lowers the rear part, so that it stands more or less upright with the tail in the water, and flicks the wings very rapidly in and out of the water and over the

back transversely (" wing scissoring "). As the wings often move asymmetrically, a spurt of water is sent now over one side and now over the other.

The majority of passerines, including the thrushes and their allies, bathe in this " stand in " way. The babblers, on the other hand, use the second method listed above. They are " in and out " bathers, jumping repeatedly in and then out of the water during a single session. While briefly in the water, they dip and shake the head, whirring the wings rapidly, all the body feathers ruffled to the extreme. As they hop away, they continue to shake the wings and then return for another dip. I have watched this form of bathing many times over the years from my Pekin Robins and then later from the Rufous-chinned Jay-Thrushes and a number of other babbler species at the London Zoo, including several more jay-thrushes. I have never certainly seen any passerines of other families bathe in this way, though it would seem that wrens (Troglodytidae) do so (Armstrong, 1955).

In some ways, this " in and out " style of bathing resembles the " from the air " plunging and rising of such aerial birds as the martins and swallows (Hirundidae) and may be an adaptation for using relatively deep or running water. I noted that my captive babblers preferred the deeper of their two bathing dishes. It has also been suggested that " in and out " bathing may be an anti-predator measure, whereby the bird both wets itself and shakes surplus water out of the plumage more or less at the same time, thus reducing its vulnerability to enemies at any given moment.

Although many birds will ruffle the plumage and perform what are really drying movements of the wings in the rain, the only passerines that I know of that bathe only in the rain are the larks (Alaudidae). They do so by lying down with wings and tail spread. On the other hand " foliage bathing ", as a subsidiary to one of the other types of bathing, is probably quite widespread and certainly occurs in the babblers for I saw it fairly often in my captive birds.

Manner of Oiling the Head and Wings

The majority of birds oil their plumage after bathing. They first stimulate the flow of preen-oil from the uropygial-gland with the bill, twisting the tail to one side, and then transfer the oil to the feathers. The passerines have developed special movements for getting oil on the more inaccessible feather areas, namely the head and the wing tips. Most species, including the thrushes, oil the head with the foot. After taking oil with the bill, they then scratch the oily bill with the foot, transferring some oil, and immediately after quickly scratch all over the head with the now oily foot. The underside of the wing is oiled by both the bill and the head together, with rapid rubbing and quivering movements. The birds stand upright and extend the wing, with the

humerus and upper arm raised, carpus high, elbow swung forwards, and the hand partly extended to sweep the primaries forward, somewhat fan-like, with their inner surfaces roughly parallel with the side of the body.

Once again the babblers use somewhat different movements, the oiling co-ordination reaching a peak in this group. Most of my observations have been on jay-thrushes and the Pekin Robin. In the first place, babblers seem rarely to oil the head by scratching but, usually, just scratch the bill merely to distribute the oil on it. They then simultaneously rub the bill and the head on the extended wing and the wing against the head, all at great speed, alternating from wing to wing and, at full intensity, spreading the tail and thrusting it sideways to steady the wing by pressing against it. I have seen somewhat similar head and bill oiling in the Blue Tit (*Parus caeruleus*), a species which, however, also oils the head by scratching.

Prevalence and Methods of Anting

Anting behaviour is widespread among the passerines having now been recorded from 207 species of nearly forty groups (Simmons, 1961*b*, 1963). This strange habit involves the application to the bird's plumage of the defence fluids of ants, chiefly the formic-acid of workers of the sub-family Formicinae. This annointing is effected either directly, the bird applying ants with the bill (" active anting "), or indirectly, the bird allowing the ants to swarm on to its feathers (" passive anting "). This last form of anting is mainly confined to the larger thrushes and crows, though also found in the tiny estrildine finches. The majority of species ant directly, using movements and postures very similar and undoubtedly homologous to those used in wing-oiling (Simmons, 1959). As in full oiling, one wing and the tail are postured simultaneously, the inaccessible wing-tips and, indirectly, the head being the main areas annointed.

Anting is very prevalent in the babblers. Twenty-six species have now been recorded as anting (see lists in Whitaker, 1957 and Simmons, 1961*b*, 1963), of the following (Delacour) genera : *Pomatorhinus* (2 species), *Paradoxornis* (1), *Turdoides* (3), *Babax* (1), *Garrulax* (13), *Leiothrix* (2), *Siva* (1), *Yuhina* (2), and *Heterophasia* (1). The great majority of these records are of captive birds and, in testing passerines of many groups for anting, I have found the babblers, together with the starlings (Sturnidae), crows, weavers, and icterids to be among the most ready of all passerines to ant if given the opportunity. The thrush assemblage, on the other hand, with the partial exception of the large thrushes (genus *Turdus* and allies), seem to ant far less readily.

The babblers show two main types of active anting. The large jay-thrushes and allies seem to be specialized for anting on the ground among thronging trails of ants. The bird seizes an ant and rapidly

applies it just once to the extreme ventral tip of one wing, contorting the tail markedly. The ant is then rejected and ant after ant taken in quick succession without the bird moving its position if possible. The smaller babblers, best typified by the Pekin Robin, seem to be specialized for anting above the ground, either with ants taken from the ground or from the foliage, though they will often ant on the ground too, at least in captivity. They use each ant several times in a lightning series of applications, again to the ventral tip of one wing at a time, the tail thrusting sideways repeatedly. Because of their short wings and conspicuously postured tail, babblers have often been reported to be rubbing ants (and even bugs and wasps) on the tail or ventral area, but this is an optical illusion. No babbler is known to ant both passively and actively in the manner of the *Turdus* thrushes, which spread-eagle themselves amongst a swarm of ants and also apply the insects to the wing-tips with the bill.

Discussion

Much more information is needed, both for the babblers and the other passerines, before a full assessment of the characters outlined in this paper can be made.

The systematic position of the babblers remains to be fully established but the evidence from behaviour does not suggest a particularly close affinity with the thrush assemblage. As regards the internal composition of the Timaliidae, on present evidence it seems that a passerine bird (preferably one with loose, fluffy plumage, strong legs, and short wings) may well be a babbler if it moves on the ground by hopping ; is social at least to the extent of permitting and seeking close bodily contact with its fellows and of indulging in mutual preening ; uses the foot to hold down food and scratches its head directly ; bathes by hopping in and out of the water repeatedly and by brushing up against wet vegetation, and oils its head and wings and ants readily by using highly characteristic co-ordinations. Difficulties are posed, however, by birds which lack one or two of these characters while showing the rest. For example, the Stripe-throated Yuhina (*Yuhina gularis*) scratches indirectly though otherwise seeming to be a " good " babbler. For the time being such cases must be left undecided.

On the other hand, the Wren-tit (*Chamaea fasciata*) of the New World provides an excellent test example of the value of the characters mentioned. This bird has been variously classified and is still officially given family status of its own (Chamaeidae) in the latest (1957) A.O.U. check-list, though most authorities treat it as a babbler. The grounds for disputing its identity as a babbler are chiefly zoogeographical for, otherwise, the group seems to be unrepresented in the Americas. Yet the behaviour evidence for the Wren-tit's being classed as a babbler is overwhelming.

Erickson (1938) studied the Wren-tit in California and, although she herself believed that her work had " no bearing on the systematic problem of the monotypic family Chamaeidae ", her paper contains much important data. This includes information on (1) the use of the foot in feeding (pp. 305–6) ; (2) clumping (p. 307) ; (3) mutual preening, including treatment of the ventral feathers (p. 308), and (4) " in and out " and " foliage " bathing (pp. 308–9). In addition, Brown (1959) found that the Wren-tit scratches the head directly.

The next stage in the study of the relationships of the babblers and other passerine groups is the painstaking, systematic collection of facts on the behaviour characters of as many species as possible, with perhaps the inclusion of further activities, such as the manner of wiping the bill. Once again, the aviculturist is in a unique position to make valuable observations.

Appendix

Display in the Pekin Robin

On 12th August, 1957, I saw the only elaborate display that I was to record during the seven years that I kept Pekin Robins in captivity. This ocurred during a heavy thunderstorm. From the appearance of the male Pekin Robin, it is an easy guess that his display might involve the bright yellow and chestnut throat and breast, the yellow, orange, crimson, and black pattern of the wing and, perhaps, the forked tail. Nevertheless, I was totally unprepared for the form that the display actually took. My current pair of Pekin Robins were clumping in a small, dead fir tree. The male " danced " rapidly round and round the female swaying his head, which was pointed up, and the front of his body from side to side, showing off the throat and breast colours. He did not ruffle his feathers to enhance these, indeed his head feathers were sleeked, indicating a measure of fear. As he dodged about thus, he displayed the pattern of both wings at the same time in a striking lateral posture, leaning towards the female, lowering the near wing and raising and inverting the far wing, still largely folded, so that it showed over his back, in the manner of certain gamebirds. This posture varied from moment to moment as the male endeavoured to keep in front of the female in a lateral position. She in turn either seemed to ignore him, or hopped away or even pecked at him. When on the ground, the male apparently tried to mount the female but, as she avoided him, a kind of " leap frog " resulted. Of course the male may have been attacking the female for I was not able to establish whether his activities were courtship or hostile ones.

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NOTES ON AUSTRAL AND SOUTHERN PACIFIC BIRDS

VI.—North Queensland

By Jean Delacour (Clères, France)

(*Continued from page 148*)

The north-eastern part of Australia possesses the best tropical rain forests of the continent, and its coast also has the advantage of being bordered by the Great Barrier Reef. It is therefore a very attractive country, some of it reminiscent of New Guinea in its flora and fauna, which naturalists should visit. Curiously enough, dry coastal districts alternate with humid ones, and there are inland temperate plateaus as well as hot arid stretches, so that very different birds and plants occur within short distances.

Our first stop was at Cairns (17° L.N.), a nice tropical seaside town, far back from the coral reef, with humid forested hills in the background and on the sides. We at once went to Green Island, a small atoll which has become a popular tourist centre. The coral beds and their wonderful animal life : fishes, giant clams, etc. are, of course, entrancing. There are interesting birds on the reef. Brown Boobies, Silver Gulls, Crested and Caspian Terns, Reef Herons, Green-winged Doves and White-eyes are numerous and tame among the trees which cover the island, and there are even some Whampoo Pigeons (*Megaloprepia*), a large and magnificent species, green, pearl grey, yellow and wine-red, easier to hear than to see.

Even the town of Cairns has plenty of birds, some which we never or seldom saw elsewhere. Yellow-breasted Sunbirds and several Honeyeaters frequent gardens ; Yellow Fig-birds and Peaceful Doves live in the streets, perching on telephone wires. Chestnut-breasted Finches are seen in sugar-cane fields. Lorrikeets, Crows, Australian Magpies, Butcher-birds, Cuckoo-Shrikes, Masked Plovers, and other common species are abundant. Pelicans, Greater and Lesser Egrets come to the mudflats at low tide with many waders.

A colony of Shiny Starlings (Glossy Calornis) provided a most interesting show. Hundreds of these pretty birds come from New Guinea every year to nest. They take possession of some large tree in a suburban garden and build in it their purse-shaped nests, much as Village Weavers do in Africa. They work hard, quarrel loudly, flying in and out, making a great commotion, and consequently a nuisance of themselves to the unfortunate inhabitants. No means of disturbance have any effect on them ; the only way to eliminate them consists of cutting down the tree of their choice. In such a case they just take over the next available one. To the ornithologist however they are a

most enjoyable sight, and, fortunately a number of the local people also enjoy them, despite their noisy habits.

The visit of the country-side around Cairns was made possible under the most favourable circumstances by Mrs. Marion Cassels, a local resident of English origin, whose study of the local bird life has become more than a hobby. We visited under her guidance, and that of her husband, several very different areas, and therefore we could watch many species in the various habitats.

The rain forests of the slopes and ridges around Cairns are typical : palms, epiphytes, ferns, vines and medium-sized trees, resembling much those of New Guinea. So does the avifauna. One hears everywhere the weird calls of Whampoo Pigeons and Fruit Doves, Megapodes, Log-runners, Spotted Cat-birds and Victoria's Rifle birds. These Birds of Paradise, the males magnificent in their velvety-black and shiny green and purple plumage, are easily seen as they fly swiftly through the trees, often stopping on vertical branches to look at you. There are many Honey-eaters, particularly, low down in shrubs, the pretty little Scarlet (*Myzomela sanguinolenta*). In the same bush one can also watch the tiny and lovely Red-backed Wrens, and the Whipbird (*Psophodes olivaceus*). Large Pheasant Coucals flop through grass and bushes. Flocks of Red-browed (Sydney) Waxbills feed and flutter low among flowering grasses and seeding bushes in which they feed and nest, just in the same way as many of the African species, a convincing proof of their close relationship. The beautiful songs of the Grey and the Rufous Shrike Thrushes (*Colluricincla*) are heard ; also that of the Whistlers (*Pachycephala*).

Further inland, on distant ridges, we visited other forests, rather drier and more open, with larger trees. We watched there the big Topknot Pigeon, a fine fruit-eating species peculiar to Eastern Australia, as well as doves, particularly the Pheasant-tailed (*Macropygia*). There were big flocks of Rainbow (Swainson's) and Scaly-breasted Lorrikeets, and quite a number of Mealy Rosellas. A dozen Sulphur-crested Cockatoos, perched high on trees where they fed, were suddenly disturbed by a Goshawk soaring overhead ; they started a fearful racket, the leader of the group taking flight after the bird of prey which speeded away frightened. Dollar Birds (*Eurystomus*) and Kookaburras were common. Many sorts of passerine birds are found in those woods, including Drongos, Shrike-Thrushes, Whistlers, Honeyeaters, White-eyes and Waxbills. We saw one Crimson-winged Parrakeet flying about the trees.

The great Atherton Table-land, between the high hills, is well settled and cultivated, mostly in tobacco, due to irrigation. There were some ponds and meadows with Plovers, Straw-necked Ibises, Darters, Jacanas, Egrets and White-faced Herons. The usual birds of the open country were numerous.

There seems to be few aviculturists in Northern Queensland, but Poincettia Garden, outside of Cairns, open to the public, has an excellent bird collection. There are, well displayed, a very representative series of Australian Cockatoos and Parrakeets, including a number of young Golden-shouldered, fine pairs of Whampoo and Nutmeg Fruit Pigeons, different doves, Brush Turkeys, and waterfowl, including Maned Geese, Eyton's Whistling Ducks, and White-eyes.

Townsville, a large city and harbour, lies 200 miles south of Cairns, but it has a completely different aspect. The surrounding country, fairly hilly, is dry, with a short rainy season only. In its own way, however, it is also most interesting to the ornithologist, who has not long to wait as there is a shallow lake, near the airport, which is full of wonderful water birds. Under the helpful and competent guidance of Mr. H. J. Lavery, of the Animal Health Section of C.S.I.R.O., we visited the whole district, mostly in search of waterfowl, which congregate there in huge numbers during the dry season, nearing its end at the time of our visit. The ponds near the airport had hundreds of Magpie Geese and many Black Swans, both nesting there later on ; some Maned Geese, numerous Black Ducks, Grey Teal, White-eyes, some Green Pygmy Geese and a few Wandering Whistling Ducks. But there were also many Australian Cotton Teal and Plumed (Eyton's) Whistling Ducks which we had not seen in the Northern Territory. The usual waders and shore-birds were abundant, and we saw, nearby, over 300 Brolgas (Australian Cranes), a wonderful sight.

The Australian Cotton Teal, (*Nettapus c. albipennis*) is very much larger than the Asiatic one (*N. c. coromandelianus*). It is actually bigger than the Green Pygmy Goose (*N. pulchellus*), and the difference is striking when one sees the two species together. Another of its peculiar features is that the male Australian Cotton Teal retains its bright green and white plumage the year round, while the small Indian one keeps it a few months only, during the breeding season.

Mr. Lavery took us 100 miles south-west, through dry country. We saw many more Brolgas. A small pond, surrounded by trees, near a house, was occupied by hundreds of Plumed Whistling Ducks, resting on the banks and on low branches. Other pools studded with blue water lilies, had little flocks of Green Pygmy Geese and Cotton Teal, often mixed, which reminded me of similar waters in Africa and Madagascar with African Pygmy Geese in their place. We saw more of these lovely ponds when we drove north, and also more Cranes. But they drop out of view when one re-enters the damper belt, about eighty miles north of Townsville. We saw there more *Nettapus*, Jacanas, Little Grebes, River Terns, (*S. leucoptera*), Porphyrios, Glossy and White Ibises, Royal Spoonbills, Pratincoles, the Blue-wing Kookaburra (*Dacelo leachi*), Dollar Birds, Wood Swallows, Peaceful Doves and many small birds.

The Townsville neighbourhood is just as good for waterbirds as that of Darwin. The lack of Radjah Shelducks and of some other species is compensated by the presence of Plumed Whistling Ducks and Cotton Teal, and the Brolgas are much more numerous. The lakes and ponds where they are seen, however, are not too safe. Large Estuarine Crocodiles (*C. porosus*) hide there, and every year fishermen fall victim to these monsters.

VII.—Tasmania

Lying off the south-eastern coast of the Australian mainland to which it is linked by the archipelago of the Bass Straits, Tasmania is a pretty island, with a gentler and greener scenery than most of Australia. The western half is made almost inaccessible by abrupt wet mountains dotted with lakes where few people can live. The rest is an attractive rural country, hilly and picturesque, with a cool climate excellent for fruit growing, cattle and sheep raising. Birdlife is not as rich and varied as on the continent ; nevertheless it is abundant, with fourteen endemic species ; a number of others have their stronghold there. We spent a week in Tasmania and our visit was made exceedingly interesting by the kindness of Mr. and Mrs. Michael Ridpath, both bird enthusiasts. Mr. Ridpath came from England three years ago to join the Commonwealth Scientific and Industrial Research Organization (C.S.I.R.O.) and has since been in charge of the survey of the Native Hen (*Tribonyx mortieri*), a large, almost terrestrial Rail peculiar to Tasmania, which constitutes a good game bird, but could easily be exterminated. It seems to be more closely related to the Moorhens (*Gallinula*) than to the Australian Native Hen (*Tribonyx ventralis*) in general proportions, colour pattern, and behaviour. It appears to be related to *Gallinula* much in the same way that *Notornis* is related to *Porphyrio* in New Zealand. We had a good look at the birds throughout the country and more particularly at a sanctuary in the hills where Mr. Ridpath has conducted a detailed and most valuable study on the species. I may add that it is a handsome bird which lives and breeds well in captivity, usually tame and interesting in its habits.

The city of Hobart, not yet too big, has an old world charm. It is beautifully situated between a deep fjord and a fine wooded mountain, Mount Wellington, which is a natural reserve. Mr. and Mrs. Ridpath live on its slope, practically in the forest, with deep tree fern gullies and mossy trees. Sugar and sugar-water are always available at a window of their house ; as you sit comfortably inside, (it was very cool outdoors in October), you could watch at all times dozens of pretty, small Honey-eaters coming to feed. Strong-billed (*Melithreptus validirostris*), Black-headed (*M. affinis*) and Yellow-throated (*Meliphaga flavicollis*), three endemic species, were common, particularly the first two ; also the Crescent (*Phylidomyus pyrrhoptera*) and farther away in the bushes,

the Yellow-winged (*Meliornis novae-hollandiae*). Also many White-eyes (*Zosterops halmaturina*) fed at the dishes, and, along the road, lovely Pink Robins (*Petroica rodinogaster*) could be seen. After dinner, on the back porch, several Opossums came from the forest to eat toast and honey which Mrs. Ridpath had disposed for them. These shy nocturnal animals would allow her to handle them, so accustomed had they become to her good offices.

We saw a good deal of the south of the island, lowlands and swamps, as well as hills and mountains. We watched the large local Green Rosellas, peculiar to the island, as well as the well-known Eastern one in many places ; also the two endemic species of Black Magpies, or Currawongs (*Strepera arguta*, *S. fuliginosa*). There were many Australian Ground-Thrushes (*Zoothera lunulata*) and various small birds up the forested slopes in the National park north-west of Hobart, among the giant eucalyptus (*regnans* and *gigantea*) and the Antarctic Beeches. But the most exciting sight up there was a large flock of Yellow-tailed Black Cockatoos (*Calyptorhynchus funereus*), hardly discernible in nature from the White-tailed (*C. baudini*) of south-western Australia, both living in similar habitats.

The beautiful wooded hills surrounding the rolling meadows where the Native Hens have been carefully watched for several years, had the added interest of being the home of two pretty species. Swift Parrakeets were plentiful on some flowering eucalyptus, feeding, calling, and flying across the open spaces. These beautiful little birds are incredibly fast on the wing, and when eating, they prove real acrobats. Despite the fact that their tongue has no brush-like filaments, their colour pattern, particularly of the wing, their narrow, pointed tail, their voice, their diet and general habits, suggest a relationship to the Lories. The other interesting species was the Firetail Finch (*Zonoeginthus bellus*), a a lovely seed-eater seldom seen in aviaries, where they prove difficult to keep. Mrs. Ridpath throws millet and other seeds near a small cabin which has been put up fairly high on the slope of an open meadow, and the little birds, usually shy and hard to detect, come fearlessly to feed from the neighbouring bush. They struck me as fairly Waxbill-like in their ways, and they no doubt provide a link between these birds and the heavier Australian Grassfinches, through their congeners the Red-eared Finch, the Diamond Sparrows and the Painted Finch. Along the road, around pools and streams, both Native Hens (*Tribonyx*) and Swamp Hens (*Porphyrio*) are common ; they never seem to notice or interfere with one another ; Spur-winged Plovers were numerous. We saw many more on the way to Moulting Lagoon, a large, shallow lake near the sea, about half way up the east coast of the island. We were taken there one day by Dr. E. R. Guiler, of the University of Tasmania, who conducts a detailed study of the habits of Black Swans. The lagoon, surrounded by rolling meadows

where sheep graze the rich grass, is the home of about 1,000 pairs of these majestic birds, which breed in reed beds and on islets between July and November. There were many young birds of different ages at the time of our visit (25th October) and pairs were still incubating. We went over to a small islet, 100 by 50 feet, where nests almost touched one another, many still contained eggs which the sitting birds had reluctantly left when we landed, swimming nearby, waiting for our departure to resume their duties. Dr. Guiler said that the islet had 103 occupied nests in 1961. It was amazing to me that breeding Black Swans proved so gregarious ; fighting between pairs never seemed to take place. There were a good many other waterfowl on the lagoon : Australian Shelducks, with broods ; Black Ducks, Grey and Chestnut Teal, Shovellers, Musk Ducks, and White-eyes, also Silver Gulls, Pied Oystercatchers, White-faced Herons and several species of Cormorants. Swamp Harriers were numerous.

(*To be continued*)

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CORRIGENDUM

In my notes on W. Australia in the March–April number of the MAGAZINE, 1963, (page 53) an unfortunate error was made in that the name of Mr. Theo Peters was given as the owner of an excellent collection of live birds in the neighbourhood of Perth. The name of the owner is Mr. A. Y. Pepper to whom I apologise for such a mistake.

J. D.

* * *

SOME NOTES ON THE NESTING OF TWO PAIRS OF TANAGERS IN A COMMUNITY AVIARY

By WILLIAM R. LASKY (Little Maverick Ranch, California, U.S.A.)

One of my community aviaries contains a pair of Maroon Tanagers (*Rhamphocoelus carbo*), the male of which was purchased 29th April, 1958, and the female 20th November, 1959. The other pair was a male Blue-grey Tanager (*Thraupis virens*) and a female Olive Tanager (*Thraupis palmarum atripennis*). This female was secured 20th November, 1959.

These two pairs of birds nested in canary nest-cups placed 5 feet apart, and at no time were observed to interfere with each other ; however, there was considerable competition for the available supply of insect food when they were feeding young.

The first nesting of the Olive Tanager—Blue Tanager cross was in 1961. The nest was not discovered until the calling sounds of the four young had given it away. They placed their nest inside an up-ended parakeet's nest-box. These four young birds succumbed toward the three-week period, undoubtedly from insufficient insect food.

In 1962, 10th April, to be exact, the hen was observed sitting on two eggs, and 17th April, a single young was found dead in the nest. On 3rd May, two eggs were again being incubated, this time in a canary cup-type nest. On the 23rd of the month, again the two babies were found dead.

8th June the hen was again on eggs and shortly thereafter hatched two young that lived for a week and a half. On 14th August she had constructed another nest, her fourth for the season. These young survived for a period of two weeks. The Maroon Tanagers first nested 6th June, 1960. Four eggs were laid, broken, and eaten by some other species. The following month this pair nested again, and again the eggs disappeared.

23rd April, 1961, the female was observed carrying nesting material, and although she hatched eggs, the young could not be reared.

13th April, 1962, this female built a nest in a dense, suspended tumble weed. Previously she had used canary nest-cups. On 27th April, two pale blue-speckled eggs were in the nest. She set these eggs until 3rd May, at which time the eggs and nest were abandoned. On the 10th of the month she had completed a new nest and had laid two eggs in it. On the 15th one egg had fallen out of the nest and the second disappeared. 8th June she was again on eggs and early in July had abandoned this nest.

Being of a nervous disposition it is believed that the constant interruptions and interferences in her sitting caused eggs to chill, and she would abandon her nest every time any one walked by the aviary.

She will be attempted to be bred this coming season as this pair of birds have a better chance in an individual aviary where they will not be disturbed, and when young hatch the parents will be liberated so that they may secure their own proper food in a state of controlled liberty.

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A CLOSE-UP VIEW OF THE MOUNTAIN WITCH DOVE

By Professor Carl Naether (Encino, California)

Having for many years been attracted by both the beauty and the behaviour of the Mountain Witch Dove, which I was so fortunate as to breed successfully for eleven successive years, I am pleased to present herewith a close-up view of this delightful dove.

Names Given the Mountain Witch Dove

Various names, both scientific and popular, have been given this dove, whose habitat is Jamaica. Among the former appear *Geotrygon sylvatica*, used by Philip Henry Gosse, in *The Birds of Jamaica*, published in 1852 in London, which affords the reader one of the earliest and most authentic accounts of the Mountain Witch Dove. Next in point of time appears *Geotrygon cristata*, used by Dr. Arthur G. Butler in Volume II of his *Foreign Birds for Cage and Aviary*, published about 1899 ; and in 1901 this same appellation was used by the author of " Bird Notes from the (London) Zoological Gardens ", appearing on page 184 of the March, 1903, issue of the Avicultural Magazine, no author having been named. The scientific name *Geotrygon versicolor*, in current use by most ornithologists, was employed as early as 1929 in an article titled " Ground Doves and Pigeons ", by T. H. Newman, which was published in the June, 1929, issue of the Avicultural Magazine. It appears likewise in James Bond's authentic *Birds of the West Indies*, published in January of 1936, by The Academy of Natural Sciences of Philadelphia, Pa. So much for a brief comment on this dove's scientific names.

Among the popular and local names given *Geotrygon versicolor* are, in addition to Mountain Witch, which seems to be the most widely used, Crested Quail Dove, Blue Dove, Blue Partridge, and Mountain Partridge or Mountain Dove.

Notes on the Natural Life of *Geotrygon Versicolor*

Gosse in the above-mentioned book writes most enthusiastically concerning the Mountain Witch : " No description can give an adequate notion of the lustrous radiance of this most lovely bird ; though it has not yet found a place in our Ornithologies. . . . This magnificent bird inhabits the most retired mountains, and the deepest woody glades there ; places difficult of approach and rarely traversed. In the dense and lofty forest that clothes the brow of Bluefields Peak, it is very numerous, usually seen singly or in pairs, walking on the ground ; the freedom of the forest there from underwood allowing it to exercise its fleetness of foot to advantage. If alarmed, it generally seeks to escape by running, its bulk and shortness of wing rendering

its flight burdensome and ineffective. Its coo consists of two loud notes, the first short and sharp, the second protracted and descending with a mournful cadence. At a distance its first note is inaudible ; and the second, reiterated at measured intervals, sounds like the groaning of a dying man. These moans, heard in the most recluse and solemn glens, while the bird is rarely seen, have probably given it the name of Mountain Witch. . . .

Various seeds and nuts I have found in the gizzards of many (specimens) that I have examined, some hard and stony ; others farinaceous, and comminuted. The seed of the lance-wood is said to afford it food. The Mountain Witch is generally spoken of as rare in the island ; but I suspect the remoteness and difficulty of access of its recluse solitudes, have contributed to this opinion . . . Robinson says it is the most beautiful pigeon in Jamaica. I should be inclined to say ' the most beautiful *bird* ', if we except the Long-tailed Hummingbird. . . . Of many which were procured for me in May, nearly every one was of the male sex ; and they were shot from trees ; on inquiry into this anomaly, I was told that during incubation the male invariably lodges in a neighbouring tree ; a singular deviation from its ordinary habits.

There is no appreciable difference between the sexes, except that the male has the vent, under tail-coverts, and thighs of a deeper chestnut, and empurpled. The red of the quills also is brighter."

In his *Birds of the West Indies*, James Bond introduces the Genus Geotrygon as follows : " I well remember my first sight of the beautiful Crested Quail Dove when following a trail high up in the Blue Mountains of Jamaica. Just ahead of me a movement by the side of the path caught my eye, and a moment later there appeared in full view one of these splendid birds as it crossed over the trail a few paces in front of me. The species is still quite common in the Blue Mountains, but appears to be rare elsewhere in Jamaica, except in the ' Cockpit Country ' of the west. . . ."

Description of Plumage and other Characteristics

Typical of the descriptions of the Mountain Witch Dove's plumage-colour is that provided by Jean Delacour in his book *Wild Pigeons and Doves* : " These ground pigeons have their occiput and nape feathers long, forming a thick, occipital crest. Their forehead and crest are olive-grey, a broad, reddish-buff streak marking the cheeks ; the neck is golden-green, shot with purple, the throat rufous-buff ; the mantle purplish-chestnut ; the lower back, rump, and tail-coverts are a greenish-blue ; with a purple gloss ; the primaries cinnamon, the secondaries and tail blackish-green ; the under-parts are pale-vinous ; the flanks and under-tail chestnut. The hens are a little smaller and duller, but difficult to sex."

The length of the Mountain Witch is given as being from 11 to 12 inches ; the tail from 3·75 to 4 inches ; the eyes blood-red ; the bill blackish, and the feet pinkish.

Life in Captivity

According to A. G. Butler, writing in *Foreign Birds for Cage and Aviary*, Vol. II, the Mountain Witch Dove found its way into captivity first in 1860, various specimens being acquired by the London Zoological Society in 1860, 1861, and 1869. I can find no evidence of this dove being in captivity elsewhere in Europe at this period. Dr. Karl Russ in his classical work " Die Fremdländischen Weichfutterfresser ", published in 1899, confines his ten-line description of the Mountain Witch Dove largely to comments on its plumage-colour and general behaviour, making no mention of its being in captivity anywhere except in the London Zoological Gardens. There it was, apparently for the first time, bred successfully in 1901, two young being reared, as reported in the March, 1903, issue of the Avicultural Magazine, no details of this breeding being furnished. Judging from the very few mentions of this dove—in my thirty bound volumes of this fine journal I found but two—its importation has been very infrequent to say the least, at any rate up to 1930.

I acquired my pair of Mountain Witches from a California dealer in the late 1940s. About to release the birds from their shipping box into a separate, small aviary, I removed a portion of the wire-front when suddenly the male " shot " out of the container against the wire-netting, in which, to my distress, his right foot caught for a few moments. This sudden mishap caused it to be crippled ever after, its owner not being able to spread the toes, but always keeping them " bunched up ". Since the bird walked with a very noticeable limp, I foresaw difficulties in mating and breeding, which however, failed to materialize.

To make a long story short, this pair raised one or more healthy youngsters every year for *eleven years in succession*. It utilized the same nest location, an open-top box 3 feet off the floor of the aviary, which was planted with low shrubs and grasses. Since almost no nesting materials were carried into the box by either male or female, I supplied some hay for this purpose. Almost from the start, the birds proved to be quite tame, especially the hen. It was but a few weeks after her arrival at my place that she began to take mealworms from the hand. Of these, as well as of angleworms, she was especially fond, eating a dozen or more per day. She proved to be very aggressive toward other species of doves, whereas her mate was much more docile and gentle. I kept the pair in a separate aviary. The moment I entered it, the hen would come running to me not in expectation of getting titbits, but to " attack " me by pecking vigorously at my shoes with every step I took. I had to be exceedingly careful not to step on her, so close

to me was she during every moment I spent in her aviary. The male, on the other hand, would never come near me. Perhaps he remembered still the great shock which he received upon being first released into the aviary.

Both birds proved to be gentle and tractable in their nesting and breeding. Even my close approach to their nest would not prompt them to leave it, though the sitting bird would eye my every movement sharply. As soon as youngsters appeared in the nest, both parent birds assumed a definite anxiety, evidenced by warning notes given the moment I went into the aviary and not ceasing until I left it.

Mountain Witches walk with a curious bobbing motion, which, oddly, I have not seen mentioned in any description of their behaviour. They spend most of their time during the day on the floor of the aviary, while at night they roost high up. The young stay in the nest for about twelve days ; upon leaving it, they usually remain on the floor of the aviary until they learn to fly, when they exhibit a wildness instinctive with all young foreign doves which I have raised. Their colour is a bluish-black, giving no hint of the lovely array of hues that is to be theirs upon maturity. As a matter of fact, the beauty of the Mountain Witch becomes apparent only when the rays of the sun strike its plumage with full force. This loveliness has to be seen to be appreciated.

When Butler, whose book is mentioned above, writes, " I had been assured by intelligent men, very familiar with these birds, that the young Mountain Witch doves leave the nest about a week after they are hatched, and are led about by the mother, who scratches for them in the manner of a fowl . . . I have made many inquiries, and found the statement very general, almost universal . . ."—it is only fair to assert and to emphasize, that the pair in my possession behaved differently. Its young stayed in the nest much longer than a week, and their mother never led them about in any way or fashion. Moreover, I have never in all the eleven years of their breeding in my aviary observed the hen scratching " in the manner of a fowl ", an observation which I suspect rests on insufficient evidence. Like Butler, I too, have made many inquiries of other breeders of the Mountain Witch Dove, none of whom can confirm the foregoing statements of his.

Present Status of the Mountain Witch in Captivity

There has been no importation of the Mountain Witch into the United States during the past fifteen or more years. In consequence, the continual inbreeding of the original stock has produced more and more sterility. In point of fact, the species may soon become extinct in confinement in this country. And there appears to be no prospect of importing fresh stock. In the light of this continuous lack of breeding

successes, I was very agreeably surprised when recently Mr. Rudkin, Jr., well-known California aviculturist, telephoned me that he had raised one young Mountain Witch to maturity. To the best of my knowledge, this is the first of its kind raised in many a year anywhere in this country.

* * *

THE EDWARD MARSHALL BOEHM AVIARIES IN 1962

By Charles Everitt (Trenton, New Jersey, U.S.A.)

It may appear to be a little tardy to write about aviary activities of a past season, but I feel sure that many will agree that bird news is always news, no matter when given. Actually the 1962 breeding season was one of the worst in the eastern part of the United States of America, both so far as the wild birds were concerned and in private collections. This was no doubt due to the varied weather we experienced throughout spring and summer that year. It was not possible to formulate a pattern with it at all. Hot when it should have been mild, cold when it should have been hot, and these vagaries in the weather were further aggravated by the scarcity of insect life.

If everything started by the birds in the Boehm Aviaries had been pursued to a satisfactory conclusion, we should have had an exceptional year. However, although the ultimate results were disappointing, much was learned of the nesting habits of some of the rarer species housed within Mr. Boehm's spacious aviaries. Therefore, as some of the species might have been probable breedings in captivity, I shall detail all the birds concerned, irrespective as to what stage of breeding they arrived. These I shall record in alphabetical order of their common names, rather than in chronological order of the events.

The pair of Azure-winged Magpies that had bred in 1960 (A.M. 1960, 223), laid eggs but deserted them. Two of the Bengal Pittas bred in 1961 (A.M. 1962, 33), were paired together and built their nest only to be killed by rats before they could proceed any further. Attempts were made to pair up the original female with one of her offspring but, although three different males were introduced, she would not accept any of them. A Black-chinned Yuhina had been obtained to replace one lost from the 1960 breeding pair (A.M. 1960, 230), but it turned out to be of the same sex, female, as the survivor. They actually built a double-chambered nest, suspended below a hanging fern, and each laid a normal clutch in their respective compartments.

However, one of the most pleasing successful nestings was that of a pair of Black-throated Cotingas—*Pipreola riefferi*—from which one

male was reared to maturity (A.M. 1963, 141). Similar fortune did not favour us with the Black-headed Oriole—*Icterus g. gularis*—for, although a chick was hatched, it disappeared from the nest at three days old. The Black-headed Sibias that had made several unsuccessful attempts to rear young the previous year, the chicks reaching the fledgling stage only, this year produced three sturdy birds that, by the end of the year, could only be distinguished from their parents by their coloured leg-bands.

Five pairs of Black-headed Sugarbirds went to nest in their respective aviaries, two of the pairs being unrelated birds bred here in 1961 (A.M. 1962, 49), but only three of the pairs reared young. As two of the successful nestings were by aviary-bred birds it did at least reveal that they breed at a year old. Blue-headed Tanagers reared one young but the Buff-naped Tanagers got to the egg stage only and then deserted their nest. Similarly with the Chestnut-breasted Nuthatches, the pair having two clutches of five eggs each time, but failing to hatch any of them. Such a condition did not exist, however, with the Chukar Partridges for this pair had fourteen fine young that were all reared to maturity.

A pair of Eastern Towhees—*Pipilo erythropthalmus*—that had been taken locally the previous year, settled down well in captivity and nested. Four eggs were laid, but only two hatched, the others disappearing from the nest. One of the chicks was missing one day but the other reached the fledgling stage only to be drowned during one of the many torrential downpours we experienced in June. Although the female built another nest, only one egg was laid and this vanished after four days. A pair of the brown Thrushes brought back by Mr. Boehm from Ecuador which had bred in 1961, five birds reared in all, made several attempts in 1962 but all to no avail. Actually this bird has not yet been definitely identified and that is why no previous report has been made on the 1961 breeding. It is thought to be *Turdus leucomelas* but, until such time as we are assured on this point, no claim in respect of the breeding is being made.

Now follows a series of birds that all reached the egg stage but, for varying reasons, failed to get any further. These include European Blackbirds, Fairy Blue Wrens, Ferruginous Wood Partridges, Gold-breasted Euphonias, Green Wood Hoopoes, Grey-winged Blackbirds, Heuglin Robin Chats, Hooded Pittas and Indian Robins. After this spate of disappointments it is pleasing to be able to write that a pair of Killdeer reared three young. Derby Flycatchers, the female having been paired to her son bred the previous year (A.M. 1962, 64), reared four young from two rounds, one from the first and three from the second.

Knysna Touracos had laid eggs the previous year but they had all proved to be clear. We were to be no more fortunate this season for

two nests of three eggs each again produced nothing. It was felt, however, that more had been learned regarding the identification of the individual sexes of the four Knysnas in the Boehm collection and an apparent pair was segregated during the winter months with the purpose of placing them on their own the following season in the hope of getting some better results.

Working in an alphabetical order does at least break the monotony of recording near misses, clear eggs, broken eggs, etc., for the next species in order is the Kurrichane Thrush, the successful breeding of the eastern race being recorded in A.M. 1963, 80.

In November, 1961, Mr. Boehm was presented with six pairs of Birds of Paradise by Sir Edward Halstrom. It was only possible to place one pair of these in the aviaries available in 1962 so the Lesser Bird of Paradise pair was selected. The male was in full adult plumage, although not in colour, and the female also was an adult. Despite this, however, the male did appear to be rather intimidated by the female and, although she built nests on four separate occasions from May to August, the solitary egg laid each time was clear. They were left in the aviary, heated throughout the winter, so that they might have the opportunity of becoming better acquainted in the hope that there might be fruitful results the next season.

A pair of Lesson's Euphonias must have fallen victims to a nest robber, never traced, in an aviary that they shared with numerous species of Tanagers, Sunbirds, Flycatchers, etc., for, from March to June they had three nestings with four, three and three eggs respectively. All the eggs disappeared within four days of the clutch having been completed. Success did come a little closer in the case of a pair of Mexican Magpie Jays—*Calocitta formosa*—for, from the two eggs laid in May, one chick hatched only to be found dead on a wooden rail in their aviary when it was five days old. This pair also were left in an aviary to themselves in the hope that another year in there might achieve ultimate success with their breeding.

The pair of Magpie Tanagers that had bred in 1960 (A.M. 1960, 225) and again in 1961, had been removed from their aviary in order to accommodate some other birds. They had been placed in one of the rooms in the main bird house, but this did not daunt them one bit. Noticing that the female was collecting pieces of wood shavings and trying to shape them into a nest on the floor in the corner of the room, a small Hemlock tree in a tub was placed in there. A home-made nest of wire netting and dried grasses was secured in the lower branches and an assortment of nesting materials was placed in the room. Within forty-eight hours a complete nest had been constructed within the dummy one and she was sitting. Only one of the two eggs hatched, the other being clear, but the chick was reared to maturity. This was

obviously a pair of birds that could not be deterred by change of environment.

In April, 1962, Mr. Boehm had received a pair of Masked Wood Swallows direct from Australia and by June they had built themselves a nest in their feeder tray. As so often happens with birds that go to nest before they have become fully acclimatized, although the eggs, two of them, were fertile and hatched, both chicks were thrown out of the nest at two and three days old. A pair of Mearn's Quail laid, but failed to sit, so their eggs were put into an incubator, only for a blown fuse to put an end to that means of reproduction.

Although Birds of Paradise are not the best of aviary companions for other species, a pair of Malachite Sunbirds did share the enclosure occupied by the Lesser Birds of Paradise mentioned earlier. The female Sunbird built a beautiful nest suspended from the roof of the aviary, about 12 feet up, but she fell victim to egg-binding so another aspiration came to nought.

I know that it does happen that birds nest, rear young and nothing is known about it until such time as the young birds are seen flying. Such an event occurred in the Boehm Aviaries in 1962 with a pair of Red-eyed Bulbuls—*Pycnonotus nigricans*. One morning we spotted the two young birds but, search as we could, no nest was located. Unfortunately they were both killed four days after having been discovered and there was no means of telling their age. From their flying ability it was assumed that they had fledged about three days prior to our having seen them for the first time.

As with the Mexican Magpie Jays referred to earlier in this article, a pair of Red-winged Starlings also had one chick, but it lived only eleven days. These losses of young birds in the nest was considered to be primarily due to the lack of sufficient variety in the live food. Although every effort was made to provide regular supplies of mealworms and maggots, the general inclement weather, coupled with extensive spraying carried out on the adjoining estates, was a deterrent to the availability of other forms of live foods in the way of moths, insects, etc.

Ever since 1960 when Mr. Boehm brought back Royal Starlings from Kenya, there had been a hope that they would breed. The nearest they got to it is that they had four clear eggs in June, 1962. The Silver-eared Mesias that had bred in 1960 (A.M. 1960, 233) and again in 1961, had their nest robbed by the Derby Flycatchers each time they made an attempt. As they were a reliable breeding pair they were caught up and handed over to a zoo where, it is understood, they have carried on the good work.

Spreo Starlings have bred each year for us and once again reproduced their kind but only two this time as against four in each of the previous two years. Tricolour Tanagers and White-browed

Wood Swallows had young but they failed to rear, again attributed to lack of variety of live food. However, the White-breasted Crakes did rear two fine birds as reported in A.M. 1962, 179.

To wind up the 1962 breeding season we had two hybrid Silver-blue Tanagers. A male *Thraupis cana* paired to a *T. episcopus*. Originally there had been a pair of the latter species in with the *T. cana* but the male bird died. The parents had two nests with one young from each but, owing to the location of their nest, in the upper part of an old tree trunk well bored by woodpeckers, it was not possible to see how many eggs there had been in each clutch or their colouring. Similarly no information was gleaned as to the appearance of the young birds prior to their being seen as fledglings. The young birds were six months old when they were donated to a zoo and, at that date, they favoured their male parent in appearance.

A summary of the season's records reveals that a total of forty-one different species, regarding the hybridization as one species, plus eight duplications were involved in various stages of breeding, but only twelve species reared their young to maturity. This was our worst year to date but, as mentioned before, the 1962 summer was the worst for many years in New Jersey and to this had been attributed the scanty breedings amongst the wild birds. These conditions undoubtedly were reflected in the results achieved with aviary birds. Maybe 1963 will be more favourable and will give us the opportunity of bringing our average of successful breedings back to their former level. Here's hoping.

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NEWS FROM CHESTER ZOO

By A. W. E. Fletcher

Since the last News, a number of interesting new arrivals and births have occurred. Three Hill Mynahs have been presented and are housed in a compartment in the Parrot House. Two of them are talented talkers, far better than most of the parrots.

A pair of the South American Black-necked Swans have now settled down well after causing some anxiety when they first arrived. They are almost certainly a true pair, so it is hoped that they will breed next year.

Two so-called Lilford's Cranes are, in fact, Common Cranes ; these two birds were extraordinarily nervous for the first few weeks after arrival and as they were in a large two-acre enclosure it was worrying when they refused to come for food with the other cranes housed with them. Now they have calmed down and are as tame as the older inhabitants. We now have five species of crane in the Gardens. Two African Wood Ibis (*Ibis ibis*) were received in May, one in immature

plumage. In spite of their name, these birds belong to the Stork family. Their appetite is enormous and they will take six or seven freshly-killed day-old chicks each in one sitting. In spite of their appetites, however, they retain a " lean and hungry look ".

Four Lesser Snow Geese of the blue form were presented by Mr. Frank Mosford and these, together with our original pair and several odds and ends of geese, make up quite a nice flock. They live with the penguins and pelicans and keep down the grass in their paddock very effectively.

Five more Orange Cocks-of-the-Rock, two of them just coming out of the immature dark brown, bring the numbers of these showy birds at Chester up to eight. Seven are the Orange species and one the Scarlet (*Rupicola peruviana*). Two have been set free in the existing Tropical House, where, with Humming Birds, Zosterops, and Waxbills, they make a most attractive show amongst the tropical vegetation.

A Red-rumped Parrakeet received in exchange provides a mate for the cock and a number of others of the parrot family include an Umbrella-crested Cockatoo (*Kakatoe alba*) and pairs of Elegant and Bourke's Grass Parrakeets, Golden-mantled Rosella and Stanley Parrakeets. Most of these were received in exchange for some of our " crop " of 1963 Pennants, of which more anon.

Finally, our Owl species have increased by a pair of Mackinder's Owls (*Bubo mackinderi*) from East Africa, which were bred at Regents Park, and six Great Horned Owls (*Bubo virginianus*) in exchange with Calgary Zoo. At the time of writing, 22nd July, the breeding season is not quite over, but except for a few birds still incubating, we have a fairly clear idea of the results. Our owls have again bred successfully, the Great Eagle-Owls having hatched and reared four owlets for the second year running. The Spotted Eagle-Owls only succeeded in rearing one youngster this year, due to the hen starting to lay in the very cold weather at the beginning of April. Only one egg was hatched, the last of four eggs laid.

Perhaps the most exciting event has been the hatching of two Humboldt's Penguins. They are now more than a month old and appear to be thriving. They are still in the seclusion of their breeding cave, with one or other of the parents constantly on guard. Only one King Penguin is incubating, the single egg being due to hatch on about 12th August. We are hoping for better luck than last year, when two pairs successfully hatched a chick each but neither survived more than a few days.

The Black Swans had a good hatch of five cygnets from seven eggs and the young birds which are now seven weeks old are splendid specimens. It has been interesting to see the devoted care of the cob and pen, sharing as they do a very large enclosure with cranes, ducks, and duikers (a very small species of antelope).

A number of the commoner pheasants have been reared and a single Swinhoe's Pheasant. Most were hatched and reared artificially but a Silver Pheasant hen was successful in raising a family of five in her public aviary.

Our resident Mallard must have hatched more than a hundred ducklings but due to carrion crow trouble, only about forty have reached the feathered state. These birds are left unpinioned and come and go as they please. Other waterfowl which nested unsuccessfully due to carrion crows were Lesser Snow Geese and Ashy-headed Geese.

Of the parrot family, Scaly-breasted Lorikeets, Alexandrine Parrakeets, Cockatiels, Indian Ring-necked Parrakeets and, in particular, Pennant's Parrakeets, have bred successfully. The two pairs of Pennant's have reared four and five very nice young birds respectively. The Barraband's × Crimson-winged Parrakeet pair which had a single young one last year produced twins in May.

Picazuro Pigeons, Deceptive Doves, and Deceptive × Barbary Dove hybrid have young, and to our disappointment the Crowned Pigeons laid a number of eggs but failed to incubate.

Twenty-two other species, some of great interest, made nesting attempts, but space forbids their being dealt with in detail.

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LONDON ZOO NOTES

By J. J. Yealland

One species and three subspecies new to the collection have been received during the past two months. The species is the Basra Reed Warbler (*Acrocephalus griseldis*) which breeds in south-western Asia and migrates to East Africa.

The African Yellow-billed Egret (*Mesophoyx intermedia brachyrhyncha*), the White-cheeked Turaco (*Tauraco l. leucotis*) and Davison's Thrush (*Turdus sibiricus davisoni*) are the new races.

The nominate race of *M. intermedia*, known as the Yellow-billed or Wagler's Egret, of eastern and south-eastern Asia has been in the collection, but some years ago. There is a third race *M. i. plumifera* of Australia, New Guinea, Buru and Ceram, and this is known in Australia as the Plumed Egret—in places as the White Crane, according to Cayley.

T. l. leucotis inhabits north-eastern parts of Africa from Eritrea to south-eastern Sudan : the southern race is Donaldson Smith's Turaco (*T. l. donaldsoni*) living in Somaliland and southern parts of Abyssinia and which differs in having the tips of the crest feathers red instead of dull bluish.

Davison's Thrush is rather like the Siberian Thrush, but darker ; the males have less white underneath.

Other arrivals of especial interest are a Monkey-eating Eagle (*Pithecophaga jefferyi*) presented by the Société Royale de Zoologie d'Anvers, two Long-tailed Cormorants (*Phalacrocorax a. africanus*), two Sacred Ibises, two New Zealand Shelducks, two Blacksmith Plovers, a Painted Spurfowl, a Blue-headed Parrot (*Pionus menstruus*), two Sierra Parrakeets, a Scops Owl (*Otus s. scops*) two Sedge Warblers, a Loo Choo or Ryu Kyu Robin (*Luscinia komadori*), four Ruppell's Glossy Starlings, two Wandering Tree Pies and an albino Magpie.

Four Princess of Wales' Parrakeets have been bred in the Gardens and a Snowy Owl reared by Abyssinian Spotted Eagle-Owls. Barn Owls, not bred here since 1905, are nesting and Sarus Cranes, whose first clutch produced one chick which died the first night, have laid again. Inca Terns laid and so did Sickle-winged Guans, but the eggs were broken.

A pair of Herring Gulls, evidently attracted by those living inside the Southern Aviary, stayed behind in the Spring and nested on the high rockwork of the adjoining Sea Lions' Pond, rearing three chicks.

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NEWS AND VIEWS

The Bronze Medal of the Avicultural Society of South Australia has been awarded to R. W. McKechnie, for breeding the Quaker Parrakeet *Myiopsitta monachus*.

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A very exciting and unique event has taken place at the Keston Foreign Bird Farm. E. J. Boosey writes (9th July) :

" We have at last bred an albino Ringneck ! It is a very nice youngster and came out of the nest last Saturday."

* * *

It is very pleasing to read in *Bird Keeping in Australia*, March, 1963, that a report has been received from a very reliable source that the Princess of Wales's Parrakeet has been sighted in very large numbers one hundred or so miles west of Alice Springs. This follows a previous report of sightings some distance north-west of Perth.

* * *

Travellers on the Underground Railway to Piccadilly must have been amazed, and some not a little alarmed, to find that a fellow passenger was a large eagle-like bird. Actually it was " Tiara ", a Crowned Hawk-Eagle, being taken by David Reid-Henry to the opening of J. C. Harrison's exhibition of bird paintings at the Tryon Gallery, Dover Street.

Masaru Iwata, Nagoya, Japan, writes that a few years ago he bred a Rosy-faced Lovebird with yellowish coloured feathers. He bred with this bird and now its descendants total forty yellows. Judging by the coloured photograph sent by Mr. Iwata it is indeed a worthwhile mutation, which in Japan is euphoniously called the Golden Cherry Lovebird.

* * *

Mrs. Ruby P. Hood, Yucaipa, California, reports : " My birds have not done too well this year but I have raised lots of Jendayas and Ringnecks, they never seem to miss ; also a few Bourkes, Elegants, one Plumhead, and some Lovebirds ; only one Rosy Cockatoo this year. I have a Red-headed Parrot on eggs now, so I hope the weather won't get too hot before she hatches."

* * *

We hear that : Claude Payne has two well-feathered young Galapagos Doves in the nest—Reg Partridge has Patagonian Conures in the nest-box, now over six weeks old but showing no signs of coming out—R. E. Harboard last year bred a White Eye—I. S. Horabin last year successfully brought off two nests with Dhyal Birds—G. Touchard's lutino Ringnecks have a nest of four young ones.

* * *

Lloyd B. Thompson, British Columbia, writes : " It looks as though this will be a rather poor breeding season. We have nine baby Ringnecks in the nest, with one lutino and possibly some blues. Plum-heads hatched one young one but it died. The Turquoisines have either laid clear eggs or let the babies die when they hatched. The Scarlet Macaws have two eggs which are beginning to look dark, and the Prince Lucien's Conures have just laid."

* * *

On the cover of the May–June, 1963, number of *International Zoo News* there is a good reproduction of the young Rothschild's Grackle recently bred in the Copenhagen Zoo. Last March the parents hatched three young ones but threw them out of the nest. On 15th April a single chick appeared in the nesting-box and this is thriving. The first success with this species was, of course, that of our late President, Mr. Alfred Ezra. In 1931, after many attempts a single young one was reared by the female alone after the male was found dead.

* * *

Conservation of the Short-necked Tortoise would appear to be far removed from the recognized interests of the majority of the members of our Society. But with some it is otherwise. Some eighteen months ago a public appeal for funds to assist in this purpose was launched.

A. J. Fraser, Chief Warden of Fauna, Fisheries Department, Government of Western Australia, now writes : " Many members of the Avicultural Society were included in the list of donors, in fact I think your members comprised the majority of Overseas donors. Their interest and generosity has contributed materially to the success of the programme for the acquisition of habitat. I am most grateful for their help."

* * *

The Giant Canada Goose *Branta canadensis maxima* has been considered extinct for the past fifty years or more. Now, however, it appears to have been rediscovered. In the April, 1963, number of the *Game Bird Breeders, Pheasant Fanciers and Aviculturists' Gazette*, there is a reprint of a report from the *Sheboygan Press*. According to this a flock has been discovered wintering in Wisconsin in the vicinity of Turtle Creek in Rock County. Positive identification came from Dr. Harold Hanson of the Illinois Natural History Survey. Last winter the Rock Prairie flock consisted of about 4,000 geese, mostly made up of the rediscovered subspecies. To date, Dr. Hanson has located about 10,000 of the Giant Canadas in the middle West.

* * *

Some seventy-five members and guests accepted the Seventh Annual Invitation of the Chairman and Council of the North of England Zoological Society to lunch at the Zoological Gardens, Chester, on 26th June, 1963. The Chairman of the Society, Miss Geraldine Russell Allen, was unable to be present and in her absence Mr. Kilpatrick welcomed the visitors. Mr. W. R. Partridge thanked the Chairman and Council on behalf of our members. Every year I say that the warmest thanks of our members are due to Mr. and Mrs. G. S. Mottershead and their staff for making this event so very enjoyable. Repetition makes the thanks none the less appreciative or sincere. Due to their efforts our members in the North of England and the Midlands are given a great opportunity of a gathering which otherwise would not be possible. It is a very great pity that more members from the South do not attend.

The day itself was not too bad—a little rain and a little sun. The roses were out, but needed another week to be at their best. Winter has taken its toll of quite a number of trees and shrubs, but the grounds, as usual, looked immaculate. The Society has been invited again next year, by which time it is to be hoped that the new developments of the Tropical and Monkey Houses will be finished—they look like surpassing even the Elephant House, which in itself is a masterpiece.

* * *

Tailpiece

" Love's Flowering.

" Mummy it was wonderful. The first things we saw were the peacocks and while we watched one of them came out in bloom ".

A seven-year old boy after the school outing to Whipsnade."

Daily Telegraph, 23rd July, 1963.

A. A. P.

* * *

REVIEWS

FINCHES AND SOFT-BILLED BIRDS. By H. Bates and R. Busenbark. T.F.H. Publications, Inc., Jersey City 2, N.J., U.S.A., 1963. No price given.

The authors of this book are, apparently, not only highly successful importers and keepers of birds in California but also run a " bird farm " and some associated pet shops. The book deals not only with seed-eating and insectivorous passerines but also with rollers, trogons, motmots, barbets, cuckoos, toucans, doves, quails, cranes, and many other families of birds. All species that are commonly obtainable in America (and some that are not) are dealt with. To a large extent, although not entirely, the same species are usually obtainable in Britain, so that this choice is no disadvantage to the English reader.

The first section of the book deals with such subjects as feeding, housing, and acclimatizing birds. Although California has a better climate than Britain and some foods and drugs obtainable in America may not be here, most of the information given is equally applicable this side of the Atlantic. The second part lists the species of birds, giving for each the scientific name, a description of the bird, some brief and usually accurate information on its habits and range, its availability on the American bird market, and the authors' opinions on its charms or drawbacks.

The style of writing is, naturally, American and so may at times seem unnecessarily verbose to the English reader, unless he is a bureaucrat. The sizes of the cages pictured on pp. 24 and 25 and stated to be suitable for a pair or a collection of small seed-eaters struck the reviewer as *very much* too small for the purpose. In America, as in Britain, the aviculturist is regarded as the villain and the sportsman as the favoured darling by many bird protectionists and the authors make some heartfelt comments on the American anti-avicultural laws.

The book is very profusely illustrated with drawings and photographs, both coloured and black and white. These are uneven in quality and range from really excellent paintings and photographs to really hideous ones of badly-stuffed birds, like the American Robin on

p. 596. The many (unsigned) pictures that might be termed " diagrammatic coloured sketches " (as on p. 588, for example), although unpretentious, seemed to the reviewer among the most attractive and effective in the book. However, any picture is better than no picture when the reader is trying to get an idea of what some species he has never seen looks like.

In spite of the criticisms made and some other points of disagreement, the reviewer thinks this book will be of use and interest to most aviculturists. If he had not been lucky enough to get the free review copy he would certainly have bought it !

D. G.

* * *

INSTRUCTIONS TO YOUNG ORNITHOLOGISTS. SEA-BIRDS. By Mary Gillham. Museum Press, Ltd., London, 1963. Price 15*s*. net.

This excellent and comprehensive introduction to the sea-birds of the world is the fourth of the series and well maintains the high standard of previous volumes. Dr. Mary Gillham explains her subject clearly and concisely and writes in a most interesting and attractive manner. The line drawings by the author, which are interspersed in the text, are both delightful and instructive and she also provides a large number of good photographic illustrations. A glossary of terms used is a helpful addition.

Not only young ornithologists but those not so young will wish to buy this book.

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John T. Walton, Studland, 18 Stanley Road, Stourbridge, Worcs. Proposed by A. A. Prestwich.

NEW MEMBERS

The six Candidates for Election in the July–August, 1963, number of the Avicultural Magazine were duly elected members of the Society.

RE-ADMITTED

Ashley B. Barrett, Longmead, Meldreth, Nr. Royston, Herts.

Miss Elizabeth S. Locker Lampson, Keepers Cottage, Copthorne, Sussex.

CHANGES OF ADDRESS

E. H. Hawke, to 11 Beryldene Road, Kloof, Natal, South Africa.

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E. J. T. Housden, to c/o The Native Courts Commissioner, P.O. Box R.W. 61, Lusaka, Northern Rhodesia.

Alan G. Mitchell, to 190 Broadway, Derby.

Dr. Danai Sanidvongs, to 2 Birom Road, Pra-Kanong, Bangkok, Thailand.

Major A. N. Weinman, to Malayan National Zoo, Ulu Klang, Kuala Lumpur, Malaya.

Henry Windle, to 7 Cornhill Road, Victor Harbour, South Australia.

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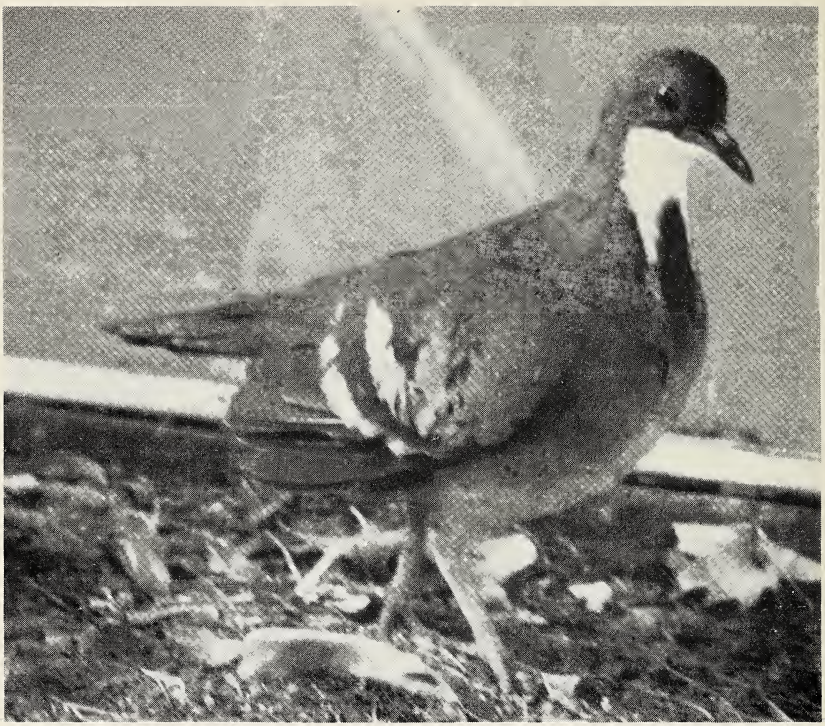
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THE AVICULTURAL MAGAZINE

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Copyright] [*Prof. Carl Naether*

Typical Pose of Bartlett's Bleeding-Heart Pigeon



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Luzon Bleeding-Heart Pigeon

[*Frontispiece*

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

Vol. 69.—No. 6.—*All rights reserved.* NOVEMBER-DECEMBER, 1963

BREEDING BARTLETT'S BLEEDING-HEART PIGEON

Gallicolumba criniger

By Professor CARL NAETHER (Encino, California, U.S.A.)

Owing to the unique coloration of their plumage, principally the bright-red or else the maroon patch on the breast, Bleeding-heart Pigeons are great favourites with most keepers of foreign doves. While many a pair of these odd beauties is being kept in private aviaries in the United States in the hope that it will sometime nest successfully, breeding results, on the whole, are meagre. To be sure, in isolated cases, in which these rather rare birds receive special attention and care, fairly numerous offspring have often been raised. To-day, Bleeding-heart Pigeons are still regarded as being both rare and " temperamental " aviary occupants, and more or less frequent importations from the Philippine Islands are needful to replenish American stocks of this much-wanted and always popular wild pigeon.

In tracing the early history of Bleeding-heart culture, I find that a truly noteworthy breeding success with the Luzon Bleeding-heart was scored many years ago in Angoulême, France, by M. Delaurier, who concentrated his best efforts on this species. To be specific, in 1877, his breeding pair produced three young ; in 1878, six young ; in 1879, sixteen young ; and in 1880, domestic pigeons, serving as foster parents, hatched no fewer than twenty young from thirty-four eggs ! This Bleeding-heart specialist ascribed his almost phenomenal success to the use of foster parents, which, so he asserted, cared for the youngsters better than did their natural parents. It is very doubtful that this enterprising Frenchman's breeding results have ever been equalled, assuredly not in the United States, even though the number of Bleeding-hearts kept in private aviaries has in recent years increased appreciably.

While the Luzon Bleeding-heart Pigeon is found in many an aviary collection in the United States, its near-ally, Bartlett's Bleeding-heart

SMITHSONIAN INSTITUTION JAN 8 1964

Pigeon (*Gallicolumba criniger*) is much rarer, and probably always will be, for lack of importations and for other good reasons. Somewhat larger than the former, though quite similar in shape, posture, and general behaviour, it differs in plumage coloration in that the top of its head, the back of its neck, and the mantle boast a lovely green ; the back and the wings a deep-chestnut ; the chin and the throat a pure white. Moreover, there is the highly conspicuous, crimson-maroon breast patch, which is both larger and darker coloured than is the bright-red " heart " of the Luzon. An excellent likeness of Bartlett's Bleeding-heart Pigeon, painted from life by Grönvold, appeared in the June, 1909, issue of the Avicultural Magazine. The striking plumage colours are exactly and faithfully reproduced by this eminent artist, whose discerning, sensitive eye missed no essential detail.

This very pretty pigeon derives its name from a Mr. Bartlett, who purchased the first specimens to be seen in England from a Liverpool dealer in August of 1863—a hundred years ago ! They were one male and two females. Regarding them as representatives of a new species, Dr. P. L. Sclater, noted British ornithologist, named them *Phlogoenas bartletti*. In the years to follow these newcomers were given other names, including *Phlogoenas criniger*, *Columba criniger*, with *Gallicolumba criniger* serving as the currently accepted name. According to a Philippine-Island authority, " this dove is fairly abundant in the Basilan Island Group, but much rarer in Samar, where it frequents forest grounds, running rapidly into dense cover and thus escaping without taking wing."

Even though Bartlett's Bleeding-heart Pigeon has been known to aviculturists for a hundred years, published accounts of its having bred successfully in captivity are, to say the least, very scarce. This writer scanned the indexes of some thirty-odd bound volumes of the excellent Avicultural Magazine in his library, but found only half a dozen references to this species. The only truly comprehensive one among them proved to be T. H. Newman's article in the June, 1909, issue, titled " Bartlett's Bleeding-heart Pigeon ". From this informative account I shall quote certain pertinent and interesting details designed to throw light on the behaviour in captivity of this lovely wild pigeon.

First and most important of all, Mr. Newman's article brings a report by Dr. Sclater of this pigeon's nesting, which features certain highlights : " The single male paired with one of the two females in the spring of 1864, breeding five times during the summer. The female deposited *only one egg* each time, in a nest of small sticks built in a flat basket placed 8 feet above the ground. Incubation lasted fifteen days. Two of the young birds were successfully reared ; two others died immature. . . . Several specimens were hatched in 1865, and one in 1867, after which time the flock appears to have died out, and the species has not been represented in the Gardens since."

Mr. Newman obtained a pair of Bartlett's Bleeding-hearts in 1907 from a Mrs. Johnstone, which had been brought to England from Mindinao, often considered their main habitat, by Mr. Walter Goodfellow. The last-mentioned person commented in part as follows, " They are by no means common in their own country. . . . They are forest birds, but do not perch in trees. You will see they are far more beautiful than the ordinary (Luzon) Bleeding-hearts. I think I have brought over the only specimens of these birds—two five years ago and three two years ago."

Describing the behaviour of his Bartlett's, Mr. Newman writes in part, " My birds spent nearly the whole of their time on the ground, and had a wonderful way of hiding behind bushes. . . . They knew full well how best to make use of all their beauty when displaying : when turning in the direction of the hen, the cock had the curious habit of standing quite still ; and at regular intervals of a few seconds he would slowly raise his wings to their full extent above his back ; this would be continued for a considerable time, but only when he could see her. The display proper would begin by the cock lowering his head and arching the wings so as to cause the bars to become very conspicuous ; he would then often pursue the hen. When quite close, he would suddenly stop and squat down in an upright position almost on his tail, with his head thrown back and his breast fluffed out and protruded so as to exhibit the ' heart ', the buff flank plumes, which are long and soft, standing well out on each side. Meanwhile, he would utter his curious rumbling coo. As is usual in such cases, the hen did not seem at all impressed, but rather anxious to get out of the way. They were not very affectionate, and generally kept rather apart. . . .

" On 17th June, 1908," Mr. Newman continues, " I found an egg in a rough nest built in some ivy only about 18 inches from the ground. The egg is large for the size of the bird, decidedly tinted with cream-colour, and very long in shape ; the shell is rather smooth and glossy in texture. . . . It is very curious that *crinigera* should lay only one egg, while *luzonica* should lay two at a clutch. . . . "

All egg-laying proved fruitless until 13th October, when Mr. Newman reports that " Both birds were sitting together on the nest, which I had not seen them do before, and I found the egg had hatched, making the period of incubation seventeen days. On 15th October, I noticed that the young one was sparingly covered with pale-yellow down, and its flight feathers were beginning to show through the skin. The hen did not leave the nest, and she resented my looking at the young one, which was growing fast : the down on the upper surface of the body seemed darker (pale-fawn), the primaries and secondaries were sprouting well with other feathers in the wings, no feathers visible anywhere else, eyes beginning to open. . . . The young Bartlett left the nest on the 28th. Its wings and legs were very well developed, but

the tail was very short, only just beginning to show ; there was a pale, whitish patch of feathers below the bare chin, no sign of red on the breast ; in fact, the area was still bare. . . .

" The first beginning of the ' heart ' appeared early in November ; also the nape and back of the neck assumed a green tint, which became gradually brighter ; the crown, however, still remained chestnut. The red patch on the heart began to show when the bird was about six weeks old, at first in the form of red stripes down the breast."

The hen of Mr. Newman's pair, as well as the young bird, died in December, the cock following in March of the next year. Commented this breeder : " During the whole time I had these birds they persisted in roosting in the open, and though the first winter seemed to have been gone through without any ill effects, the exceptional severity of the last one was, I think, too much for them. . . ."

So much for the early breeding of Bartlett's Bleeding-heart Pigeon. Now I wish to trace the behaviour of a breeding pair which I acquired two years ago. Thus supplementing the excellent account which Mr. Newman gave many years ago, my comments are meant to emphasize distinctive aspects of breeding behaviour.

At the time the pair was offered to me, I hesitated long before accepting the offer because the hen's plumage was in deplorable condition. The feathers on her breast and belly, instead of lying smooth and flat, stood almost erect as if the bird had been plucked severely, which indeed may have been the case. Moreover, she was listless, standing about in a corner of the aviary and giving every appearance of not being well. Being, however, desirous of once again keeping and perhaps breeding these handsome pigeons, at the same time being unable to obtain their likes anywhere else, I took the pair home and placed it in a small separate aviary. My immediate concern was, of course, for the well-being of the hen, the cock being in excellent plumage and health. In the hope of improving her badly ruffled feathers, I ordered a tube of the widely-used " Federvit " from Germany and used it promptly—but with no visible effects whatsoever. Next, I mixed some codliver oil with the milo and corn that constituted the birds' principal grain diet, and I also dipped the mealworms which these doves took greedily in codliver oil. Moreover, I fed them a generous portion of diced Longhorn cheese every single day. Very slowly the ailing hen's health seemed to improve : she took more and more interest in the food proffered her and she ate more and more of it. Her plumage, however, remained badly ruffled, showing here and there naked spots on the breast and abdomen. In fact, it never regained its normal, smooth texture during the entire time this bird lived in my aviary.

I was much surprised when after a period of four months, the hen evinced an interest in nesting : she began to sit in a feed-crock set in a

hanging, glass-enclosed box, in which I had placed short-cut hay to serve as a nest foundation. This arrangement the pair accepted readily, and without adding nesting material to speak of. Whenever she was on the floor of the pen, her mate pursued her so rapidly and so continuously that she sought refuge either on a high perch or else in the feed-crock. Twice she sat almost the entire day and night on the make-shift nest, as if indeed she were brooding, However, she did not lay the single egg until the fourth day, when she began to incubate in earnest and when also her mate began to relieve her from approximately ten in the morning until late in the afternoon. Incubation proved fruitless : the egg was infertile, as were the next two, laid at intervals of three weeks. This state of affairs did not surprise me in view of the hen's plumage, which was still in bad condition. I should add at this point that she was noticeably smaller than the cock, much less colourful, her breast-patch being duller and smaller ; in short, she was easily identified as a hen, probably an imported specimen and one having been given very inadequate care in captivity.

So as not to lengthen this account unduly, let me simply state that this pair during a single season managed to raise six healthy youngsters, of which one died when three months old. The remaining five, considerably larger in size than their parents, are still in my possession, and in excellent physical condition. At best, Bartlett's are difficult to sex. Thus far, I am sure of only one hen among them, she having laid once, and she is about to lay once again, her first egg being infertile. Sometimes by bringing three or four specimens of these pigeons together in not too large space, but space affording them suitable retreats, the sexes will " sort themselves out ", so to speak, that is, the males, provided of course they are in breeding condition, will soon assert themselves aggressively in the presence of other males and females. Sexing Bartlett's Pigeons simply by the size of the maroon breast patch is not an efficient method, there being often hardly any difference in the size, or in the intensity, of the crimson-maroon.

I fully agree with Mr. Newman in his comments that these pigeons show little, if indeed any affection toward each other, even during the height of their breeding activities. The hen appears always to be on the alert—as if expecting her " lord and master " to pursue and attack her, which he will certainly do, should she deign to leave eggs or young during her regular brooding time. Bartlett's, moreover, appear to be restless creatures, nervous, even though I keep each pair strictly by itself in a pen, 4 feet wide, 8 feet high, and 10 feet deep, planted with some shrubs. Thus the birds are afforded privacy, and since the pen is solidly roofed over, there is complete protection from above. Yet, despite this management and the care they get daily, the five fully-grown young and the old male have shown, until yesterday when one pair began to nest, no inclination to breed for many months in

this paradisiac climate. Little wonder that many fanciers call these Bleeding-hearts " temperamental ". It simply means that we do not as yet understand their special needs sufficiently well to be able to cater to them suitably and fully. And it is surprising how little effort many bird-keepers make to arrive at such an understanding. I welcome the challenge which so-called temperamental wild doves and pigeons present in captivity, for it serves as an incentive to discover through gradual, careful observation little-known phases of their natural actions and reactions which may prove practical and valuable in inducing them to breed successfully.

My Bleeding-heart Pigeons, both Bartlett's and Luzons, use the same nesting site again and again, and often they do not bother to re-build the old nest at all. Whichever bird is sitting, male or female, will turn to face me when I enter their pen and at once assume an alert position. These pigeons will not tolerate repeated nest inspection : I have learned to leave them strictly alone, inspecting the contents of their nest only when it is not occupied, and then very carefully. Their diet consists of milo and maize, with daily additions of diced cheese and live mealworms or angleworms. These additions are increased when young are in the nest. An excellent food, though rather expensive, is shelled sunflower seed, which seems to be their favourite.

Currently (I am writing this article in July) I seem to be the only person breeding Bartlett's Pigeons, at least in California. But there must be other birdlovers as fortunate as I am. If so, let them come forward with their observations of this most beautiful pigeon, so that we may exchange and compare our experiences for the benefit of all interested parties. There have been, it seems to me, far too few reports of breeding Bartlett's Bleeding-heart Pigeon.

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Copyright] [*Heather Seth-Smith*

David Seth-Smith
1875–1963

[*To face p. 223*

IN MEMORIAM

DAVID SETH-SMITH

1875–1963

With the death of David Seth-Smith on October 30th, 1963, the Avicultural Society has lost a much loved President and one who has done more for aviculture and the Society than any other single person. His whole life had been bound up with the Society since its earliest days—as he wrote in the Jubilee number of the Magazine in 1944—" It is difficult to believe that half a century has passed since, in November, 1894, I was handed a proof of the first number of a new journal to be entitled *The Avicultural Magazine* by my old friend, J. B. Housden, who thereupon put my name up for membership ". David Seth-Smith was Editor of the Magazine from 1901 to 1907, with Dr. A. G. Butler, 1907–1908, and with Frank Finn, 1908–1909. After an interval of some years he again took on the editorship with R. I. Pocock from 1920 to 1923, and then with the Marquis of Tavistock for one year 1925. From 1926 to 1934 he edited the Magazine alone. It is owing to Seth-Smith that the Magazine has reached the position it now holds in ornithological literature for not only did he develop it as Editor but he was a constant contributor and his numerous articles on many groups of birds still remain indispensable for reference. In addition, his series of articles " Early Years of the Avicultural Society " which appeared from January, 1939, to April, 1940, are an invaluable record of the activities of the Society and the achievements of its members.

Mr. Seth-Smith was elected a Vice-President in 1950 and on the death of his old friend Alfred Ezra, became President in 1956. His constant and keen interest in all aspects of the Society's activities is shown by the fact that he was a founder member of the British Aviculturists' Club (established in February, 1946) and was its first Chairman, remaining in this office till 1954. He was also a founder member and Trustee of the Ornamental Pheasant Trust which was set up in 1959.

David Seth-Smith was no less distinguished as an ornithologist and did much to obtain recognition of the value of aviculture ; as early as 1905 he contributed a paper on " The importance of Aviculture as an aid to the study of Ornithology " at the International Ornithological Congress held in London that year. He was elected to the British Ornithologists' Union in 1901 and was a Vice-President from 1938 to 1941. His other services to ornithology included the editorship of the *Bulletin of the British Ornithologists' Club* which he carried on from 1915 to 1920 ; he was made a Vice-Chairman of the Club in 1936–37 and was Chairman from 1943 to 1946. He was also deeply interested in

bird preservation and took a great part in the work of the International Council for Bird Preservation acting as Treasurer of the British Section from 1936 to 1957.

David Seth-Smith was a keen nature photographer and was not only expert in taking photographs, but also did all development of negatives and enlargements himself. His photographs were of very high standard and many of his studies of birds have appeared in the *Avicultural Magazine*. A few years before his death he presented his extensive collection of negatives to the Zoological Society of London.

Mr. Seth-Smith was an all-round naturalist and his knowledge of mammals, insects, fish, and all forms of animal life was outstanding ; he was also no mean botanist and a great gardener. His simplicity and his deep love of nature gave him the ability of imparting his knowledge to others and he can justly be acclaimed the pioneer of natural history broadcasts, when in the years before the war he broadcast every Monday in the Children's Hour. His listeners included " children " up to 90 years of age and again and again he topped the poll in the popularity vote for broadcast programmes. There is no doubt that the quiet, friendly voice which began " This is the Zoo Man speaking " played no little part in arousing the great interest in wildlife which has become so widespread to-day.

Starting his career as a civil engineer, Mr. Seth-Smith was Inspector of Works, Zoological Society of London from 1909 to 1923, but living things were his dominating interest and in 1923 he became Curator of Birds and Mammals, which post he retained till his retirement in 1939.

He married in 1901 Miss Mary Scott by whom he had a son and two daughters. After her death he married, in 1946, Miss Heather Heydeman.

David Seth-Smith was a man of innate kindness and his great variety of interests and sense of humour kept him ever young in spirit. His wife Heather shared in, and identified herself with, all his interests, and always accompanied him to international conferences and to the functions of the Avicultural Society—to her the sympathy of all Members is extended.

P. B.-S.

* * *

AN APPARENT NATURAL HYBRID BETWEEN A COMBASSOU AND A PIN-TAILED WHYDAH

By C. J. O. Harrison (Perivale, Middlesex, England)

I recently purchased from a local pet shop a small assortment of the more usual cage-birds with a cock Combassou in breeding plumage which appeared to me to show some peculiarities. The plumage was black with a marked dark-blue gloss that had a slight violet tint, the bill was white faintly flushed with pink, and the legs and feet were red. An examination of museum skins showed that it most closely resembled *Hypochera funerea*. The wing-butts showed brown when the bird raised them a little away from the body, and there was a slight concealed white patch on either side of the rump.

All these details are typical of a normal Combassou, but in addition there was a single narrow feather of uniform width arising from the upper tail coverts and appearing about 2 inches long. It extended well beyond the normal tail, and was slightly asymmmetrically placed towards the right-hand side. In addition there was a single white feather on the mid-breast.

Apart from this the only other thing I noted about it was an excitement note, a loud harsh nasal " chuc ", rather like the harsher chirps of the House Sparrow, *Passer domesticus*. At times a series of similar notes were run together to form a long harsh rattle with a slightly fluctuating pitch, rather reminiscent of the furious scolding of a Wren, *T. troglodytes*. This could be the " sustained twittering " referred to by Mackworth-Praed and Grant (1955) for *Hypochera*.

Now there is a blue long-tailed Whydah, the Steel-blue Whydah, *Vidua hypocherina*, but this is a much lighter blue over the whole plumage and has white on the under wing-coverts and inner webs of the flight feathers, and this white also shows on the edges and butts of the closed wings. The bill is greyish-flesh, and the feet dusky-flesh coloured. This is confined to dry thorn country in East Africa from Abyssinia to Tanganyika and is local in occurrence. Little is known of it. It is a very unlikely species to turn up in a small pet shop after passing through the hands of various dealers.

The bird described here is much more likely to have originated in West Africa. *H. funerea* would seem to have played a major part in its production, but some other species appears to be involved. The most likely is the Pin-tailed Whydah, *Vidua macroura*. This has four long " tail feathers " (these feathers arise in the upper tail-coverts) similar in shape and appearance to the one possessed by this bird, but considerably longer. In addition it has large areas of white on the plumage including the breast.

Hybrids are relatively likely in the Whydahs. In spite of the difference

between males in breeding plumage the females are all very alike ; and in addition captive Whydahs are notorious for their readiness to copulate with almost any small bird irrespective of species or sex. Nicolai (1959) comments on their tendency to mate with birds of species which have different soliciting postures, and records that males of the Shaft-tailed Whydah, *V. regia*, and the Cameroon Combassou, *H. camerunensis*, responded immediately and copulated with soliciting hens of two Serin species before the males of the Serin pairs appeared to become aware of what was happening. In such circumstances interspecific matings between the much more similar Whydahs themselves would seem to be even more likely, and in related species might be expected to produce natural hybrids in the wilds.

The appearance of this hybrid may give us cause to review the case of the Purple Whydah. Only three male specimens of the latter are known, two being referred to and one illustrated by Roberts (1940) and a third found among imported birds and kept by C. Everitt, and presented on its death to the British Museum (Natural History). The Purple Whydah was originally thought to be a species but is now suspected to be a hybrid between a Combassou and the Paradise Whydah, *Steganura paradisea*. These birds are black with a marked purple gloss over all the plumage. They have long tail-feathers which vary from one individual to another but although smaller and more modified, most closely resemble those of the Paradise Whydah. Since the hen Whydahs are relatively similar, and the apparent hybrid cocks show a greater resemblance to one parent than another, it is possible that a hybrid hen might escape notice. In addition Abrahams (1939) has described an apparent hybrid between a Paradise Whydah and a Shaft-tailed Whydah.

From the five apparent hybrids one may conclude that where interspecific hybridization occurs in the Whydahs between Combassous and other species there is a tendency for the Combassou colour to persist, and for the cock to show tail-feathers similar to those of the other parent, but modified in both length and shape. This would seem to support Friedmann's view (1960) that the Combassou represents the earlier, more generalized, form of Whydah, from which the more elaborately plumaged species have evolved.

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NOTES ON AUSTRAL AND SOUTHERN PACIFIC BIRDS

VIII.—New South Wales

By Jean Delacour (Clères, France)

(*Continued from page 199*)

This great State not only includes the largest city in Australia, Sydney, but also the capital territory (A.C.T.) surrounding Canberra, which has been carved out of its south-eastern part, on a high plateau. It shows a considerable diversity. Near the coast, and on the mountains along it, the climate is temperate or cool in the southern parts, even cold at higher altitudes, with a great deal of snow in the winter ; but it is subtropical and warm in the north. There is a good rainfall in the east, twice as much as in southern California, but the plain becomes dry west of the mountains and the mallee covers most of it. There are therefore great differences in the fauna and flora.

Our visit to Canberra was made particularly interesting by the presence in the capital city of Mr. H. J. Frith, Officer-in-charge of Wildlife Survey section of C.S.I.R.O. He had already arranged for our visits throughout the country in the most kind and efficient way. Mr. and Mrs. Frith had come to Sydney to greet us when we first arrived there. Thanks to him we had an excellent general view of the birds of the region.

The wildlife survey section of C.S.I.R.O. is comparatively new. Until it started operating, bird studies in Australia had been carried on either by Museum curators who were not always given the means to work as they wished to, and by amateurs, who, fortunately have been numerous, enthusiastic, and well informed since the end of the last century. Now a number of well equipped, adequately provided positions are available to biologists who, under Mr. Frith's directives, can make exhaustive surveys of the fauna and its life habits. Birds are featured particularly as they altogether make up the best part of the local game, and they are important to agriculture. The outstanding beauty of many Australian species are also a considerable asset in the field of recreation, and a special attraction to visitors from all over the world. Dr. Warren Hitchcock, Assistant to Mr. Frith and president of the R.A.O.U., took us around Canberra the first day. Eastern Rosellas and Red-rumped Parrakeets can be seen in the numerous parks and open places of the new city, as well as the usual common birds : Magpies, Mudlarks, Red-Wattle Birds, Willy Wagtails, Noisy Miners, and the like. We were particularly interested in flocks of White-winged Choughs (*Corcorax*), fairly large, sooty black birds which certainly neither look nor behave like crows.

Mr. Frith, busy as his position keeps him, insisted in showing me himself the country around Griffith, some 200 miles to the north-west of Canberra, where he has been stationed several years and done a great deal of work, particularly with the Mallee Fowl on which he has recently published an excellent book. As one drives to the west, the plateau and the hills grow lower until the interior plain is reached, much drier than the higher country. There is much mallee, but a great deal of it has been cleared for farming. Irrigated fields around Griffith make the large town an important agricultural centre. It must be a particularly favourable climate for growing roses, which in November, were in a state of splendour I seldom had seen before. Birds were numerous throughout ; Galahs abound, and, west of Griffith we saw some twenty Leadbeater's Cockatoos feeding in a large field, the only ones ever encountered during our trip. Red-rumped, Blue-bonnet, Barnard's Parrakeets and Cockatiels were common. Also Kestrels, Brown Falcons, Whistling Eagles, and Black-shouldered Kites ; Bee-eaters, Sacred Kingfishers, and Kookaburras ; Emus appeared here and there, and also a few Red Kangaroos. Mr. Frith took us to the mallee patch, now a reserve, where he studied the Mallee Fowl. The birds are quite tame there ; soon after we entered the wood we saw a female, feeding ; further on was the nest. Mr. Frith dug it open and showed us a large egg. The male was walking around quite near, disturbed and agitated, but not at all shy, and eventually came to the nest and started filling up the holes while Mr. Frith was still on it. Great Grey Kangaroos live in the mallee and we also saw some Owlet Nightjars (*Aegotheles*), many Babblers (*Pomatostomus*), Trillers (*Lalage*), and White-winged Choughs. Perhaps the most interesting spot was the curious wooded marsh, full of large eucalyptus and other trees growing on hundreds of small islands and even in the water, located on a large sheep station, Woowandard, near Booligal, 120 miles west of Griffith. These peculiar swamps have more or less water and consequently change greatly in size according to rains ; they may remain dry for several years. They were moderately full in November, 1962. We spent several hours in a small flat-bottomed boat in a veritable bird paradise. There were Cockatoos, Parrakeets, and numerous small birds in the trees, and many nests. White-breasted Sea Eagles flew through the branches, where sat Nankeen Night Herons and three species of Cormorants ; Black Swans breed there, rather unexpectedly, on the narrow channels between the trees, as well as Coots and Little Grebes. A number of Black Ducks, Grey Teal, White-Eyed, and Pink-eared Ducks could be seen swimming ahead of the boat, and we even watched a Freckled Duck, a rare and puzzling species, which Mr. Frith was as anxious to show me as I was to see it. It was a thrilling moment.

Large reedy swamps, much of them dry, extend outside the drowned

forest, and we saw there more ducks, Cormorants, Herons, Darters, Straw-necked and White Ibises and Yellow-billed Spoonbills. A pair of Wedge-tailed Eagles, very large, were flying high up, the only ones I could detect during the two months I stayed in Australia. The drier and higher land was also very interesting. The owner of Woorandara, Mr. Keith Turner, unlike most other sheep farmers, loves and protects the local fauna. There were many Cockatoos, Crested Pigeons and other birds, and hundreds of Red Kangaroos, a truly marvellous sight. Mr. Turner does not believe that these wonderful animals do a great deal of harm on the station, ten of them not consuming what one sheep does. May his example contribute to stop the senseless slaughter of Red Kangaroos !

Mr. Frith had arranged for Mr. Joseph M. Forshaw, one of his assistants, to show us the Snowy Mountains, to the south of Canberra, various interesting areas in its vicinity, and the eastern coast. Mr. Forshaw is making a detailed study of Australian Parrots and Parrakeets, the first results of which have already appeared in the Avicultural Magazine. He first took us to the farm of one of his cousins, in the hills not far from Canberra ; we had some interesting hours there. The grassy slopes have many scattered old eucalyptus, full of holes, and there lives a large colony of Pennant's, or Crimson Rosellas, as well as some Redrumps and Eastern Rosellas. These birds, well protected, have been studied carefully.

It was cold, wet, even snowing in the fine mountains where great dams have recently been built. They are well wooded and bird-life is abundant on them. We were particularly anxious to see Gang-gang Cockatoos, and we found a few of these strange and beautiful Parrots feeding and sitting on trees as snow was falling.

Sydney has some beautiful country in its very suburbs, and quite a good deal of it has been made into preserves where the native fauna and flora are protected. There are some well-known ornithologists in the city, and I had the pleasure of seeing many of them at a meeting of the R.A.O.U. Mr. Alec H. Chisholm is well known outside Australia as a prominent ornithologist, and I had already had the advantage of meeting him in Western Australia, when, like myself, he had come to see the Noisy Scrub Bird. He and another well-known ornithologist, Mr. K. A. Hindwood, were good enough to take us to the foothills and to show us, in a wood, the bowers of the Satin Bower Birds. Besides these fascinating birds were many Bell Miners (*Manorina*) a fairly large Honey-eater with a crystalline call mixed with harsh notes. The woods are very well stocked with small birds. We drove through the cultivated country. Various Cockatoos frequent old trees, and in marshy places, Pelicans, Jabirus, Ibises, and Spoonbills are seen as well as other waterbirds. Yellow Robins, Blue Wrens, Leaden Flycatchers, several Honey-eaters, particularly the pretty little

Spinebill, are common in gardens, along with Blackbirds and Goldfinches imported from Europe, and also Red-eared Bulbuls and Spotted Doves from Asia.

No aviculturist arriving in Sydney can wait to meet Sir Edward Hallstrom, a notable Honorary Fellow of our Society. As he is a close personal friend I was most anxious to see him. But he still was in the United States when I first arrived in Sydney, attending a meeting of the International Union of Directors of Zoological Gardens at San Diego, (where I should have been myself!). I had to wait until my return from Queensland to find him. Sir Edward has for many years very efficiently managed the Sydney Zoo at Taronga Park and generously stood the cost of most of the installations and of the acquisitions of rare animals. At the same time he possesses wonderful private collections of birds in and outside the city (Willoughby and Mona Vale), and also on the highlands of New Guinea (Nondgul). I naturally was most interested in seeing it all. Sir Edward's kindness and hospitality are proverbial among zoologists who have visited Australia, and I was not disappointed.

Sir Edward Hallstrom's main object is to keep and breed animals and birds under the most favourable conditions. Their health and comfort come first, and the planning has been primarily practical. Most installations at Taronga Park and at his private places are very large, substantially built with solid concrete shelters, sometimes even partitions and floors. It provides a maximum of protection, privacy, and sanitation. He has proved highly successful, the longevity and the rate of reproduction of birds and mammals have been greater there than at any other zoo I have seen so far. The favourable climate of Sydney, much like that of southern California or the Mediterranean Riviera, perhaps even milder, also has contributed to this happy state of affairs. Because of the complete prohibition to import any birds or ungulate animals, it has been extremely important to prolong their life to the utmost, and to propagate them as much as possible. Needless to say, the feeding and general care are excellent and very carefully devised.

The bird collections at the Taronga Park Zoo, although handicapped by the import prohibitions, are extremely good in Australian and New Zealand species (birds from New Zealand are permitted to enter Australia, but not those from New Guinea), and I will not endeavour to enumerate all those represented ; all the better and more suitable ones are kept. There still is an excellent series of Birds of Paradise, all there since twelve years or more, each bird or each pair living in very deep, long aviaries, carefully protected and planted wherever possible. A few have reared young, particularly Salvadori's. Victoria Crown Pigeons are very numerous, and also Nicobar Pigeons and Jobi Doves, which breed in great colonies in big

flight cages. Parrots and Parrakeets are very well represented, both native and exotic species, many breeding. There are dozens of lutino Ringnecks, and many more in Sir Edward's private aviaries, 400 in all, and continually increasing, all reared from a few pairs imported years ago. Ostriches and Rheas breed freely. Waterfowl are comparatively few as accommodations are difficult because of lack of flat ground and of natural ponds. But Magpie Geese and Black Swans are continually breeding.

Sir Edward's home is situated on one of the small rocky, pretty peninsulas of the harbour, itself a long picturesque fjord, and he has built around the rugged shores rows upon rows of aviaries, mostly for parrots. There are numerous pairs of Cockatoos, particularly of the rare and difficult Glossy Black (*Calyptorhynchus lathami*), Macaws, Amazons, and Grey Parrots, and many have been reared there. Each pen is very long, with a large shelter and wind-breaks, most practical and suitable for parrot breeding.

The smaller Parrots and Parrakeets are now kept at Mona Vale, a valley near the coast, in the lovely country north of Sydney. Much of the background is a national park, and it is all well wooded, hilly, and attractive. Sir Edward possesses there a weekend house in the middle of a good acreage. There are large enclosures with several species of Kangaroos, Wallaroos, and Wallabies, many of them albinos, white strains of them being established. It was the only place where I saw a number of Apostle Birds (*Struthidea*) feeding in the company of more widespread species. They are curious birds, tame, inquisitive, and amusing in their ways. Several rows of large, well-built aviaries stand at the back of the house ; they contain a selection of the rarer species, many pairs of each. The most striking ones were the lovely Golden-Shouldered and of their hybrids, a pair of lutinistic Turquoisines, two pairs of albino Galahs, which retain their pink head, neck, and breast, and, of course, lots of lutino Ringnecks. I have seen many large and successfully kept Parrakeet collections in the world, but none as well housed and cared for as those at Mona Vale.

I spent a few days in Sydney now and then between trips to different parts of Australia, to New Guinea, and to New Zealand. Each time I had delightful visits with Sir Edward Hallstrom, looking at or talking about the objects of our common interest. I am certain that the members of the International Union of Zoo Directors, due to meet there in 1964, will enjoy enormously a visit to the Australian metropolis, particularly the hospitality of their host. I am naturally looking forward to being there.

IX.—New Guinea

I had wanted for years to have a glimpse of New Guinea, that wonderful island of the Birds of Paradise, the Crown Pigeons, and the

Cassowaries. It has the richest avifauna in the world, after Colombia, in the number of species represented. My age does not allow me any longer to go on tiring and difficult expeditions, as I used to in the past, and I have to content myself with easier trips, which fortunately air transportation has made possible to-day. Therefore a quick visit to Sir Edward Hallstrom's Station at Nondugl, in the Whagi Valley of the central highlands, was a perfect opportunity. Sir Edward's health last November did not permit him to come with me, but he kindly arranged for my visit. I flew to Port Moresby, an insignificant town among the dry hills of the coast, and soon a small, old plane (DC 3) was to take me to Goroka. However, landing there was prevented by a storm, and I found myself at Madang, on the east coast, which is hilly, lush, and attractive. But soon a six-seater flew me up to Goroka, over the high mountains. The other passengers were all native Papuans, in local dress, that is to say a small belt, shell or bone face ornaments, and feathers in the hair. Goroka is an important centre, with a good hotel. The view of the mountain ranges is magnificent. Two tame Cockatoos roamed the grounds. Papuans swarm, as elsewhere in the high valleys, between 5,000 and 6,000 feet of altitude. Short, but sturdy, brown with large, hooked noses, they reminded me of some Japanese masks. They are active and friendly, obviously intelligent. Another little plane took me over a range to Minj, some 20 miles from Nondgul, where I was driven by landrover along a difficult road, as the wide valley is cut up by ravines such as I had never observed elsewhere. I was welcomed by Mr. Fred Shaw Mayer, the well-known collector, whom I have known well for many years. He had brought over, in the thirties, year after year, magnificent birds from New Guinea and the neighbouring islands for my late friends Herbert Whitney, Alfred Ezra, and John Spedan Lewis, and also for me. He now manages Sir Edward's property in New Guinea. I was glad to spend four days with this old friend and to talk of the past, as we have so many common memories.

Mr. Shaw Mayer has laid out the grounds at Nongdul with great skill and taste, and besides the numerous aviaries, there are several large ponds, beautiful trees and shrubs, and orchids. Many wild conifers grow in the area up to the top of the high mountains (*Araucaria*, *Podocarpus*, Cypresses), also many large ferns, (*Cyathea*, *Angiopteris*), pandanus, but few palms. One species of local eucalyptus looks entirely different from the lowland ones.

Wild birds are not numerous in the high valleys for two reasons. First, the native avifauna is a forest one, and few species have adapted themselves to the open and cultivated spaces, which now prevail ; those which naturally frequent them have only just started to come. Second, the natives are great and skilful hunters. They know the birds and their habits perfectly, and as they want the feathers of many

of them to decorate their hair, and the body of all for the pot, destruction is appalling. They are very choosy about feathers and they only seek particular ones to which some religious or legendary interest attach. The chance of supplying them with artificially treated feathers of domestic birds to protect the wild ones is absolutely nil. Peacock feathers for instance, have been completely ignored by them. Local birds living around 5,000 feet, and consequently within their reach, are doomed. This is unfortunately the case of the Salvadori, Blue, and Lesser Superb Birds of Paradise, once common around Nongdul, now scarce. Only a few females and immatures can, with luck, be encountered.

Captive birds at Nongdul, however, make up for the scarcity of wild ones. The aviaries number nearly one hundred and consist of four well-spaced rows of ten compartments, each of the proper size for a pair of Birds of Paradise, and of several groups of bigger ones. All have large shelters at the back, and are very heavily planted, except a few containing Parrots and Birds of Paradise particularly destructive to vegetation ; some are very large. It is an excellent and most practical installation. The climate at Nongdul is temperate ; it can drop to 40 degrees at night. It is warm during the day, but there is little sun and much rain, the sky being often overcast. I was lucky during my visit to the highlands, as it was dry and sunny ; an unusual drought, I was assured. The birds of these high valleys, and more so those living higher up, are therefore fairly hardy.

Birds of Paradise predominate in the Nongdul collection. There were in November, 1962, about 160 of twelve species ; Salvadori's, Finch's Lesser, Blue, Ribbontail, Stephanie's, Meyer's Sickle Bill, Carola's Six Plumed, Loria's, Wattled (*Loboparadisea*), King, Hunstein's Magnificent, King of Saxony's. I had never before seen the latter alive ; there were several males adorned with the tremendously long, horny head feathers. Four species have successfully nested at different times ; Blue, Lesser, Ribbontails, Stephanies', the last two having also produced hybrids. To this must be added Salvadori's. Three young, plumeless males and several females live in a large, planted flight, and there was a nest. Mr. Shaw Mayer so far doubted that non-adults could breed, but we looked into the nest : there were newly hatched chicks in it !

I had never seen before anything like the Nongdul aviaries, and it taught me a great deal. It appears to me that the usual treatment of Birds of Paradise in Europe and in the United States is wrong. Their cages are too small ; they are given too much heat ; they are overfed. They should be in large, outdoor aviaries, well protected from winds, with a large shelter at the back kept just warm enough (40 to 50 degrees) during the coldest days. Indoor cages in hothouses are unsuitable. A good length for the larger species is 25 to 30 feet, by 6 to 10 feet wide ; smaller compartments (18 × 6) will do for Kings, Magnificent, and

other similar birds. The more space the better. The food they receive at Nongdul consists, in the morning, of a mixture of mashed papaya and banana (10 per cent of the latter), crushed dog biscuit and fresh ant eggs. This food is eaten by mid-day, when the birds are given plain fruit, mostly papaya and any available berries. Only a few (six to ten) mealworms a day ; no meat. When ant eggs and papaya are not available comparable ingredients can be used, but, on the whole, this is a very satisfactory diet. Mr. Shaw Mayer is a great expert ; his birds and also those of the Sydney Zoo, live longer and in better condition than in any other collections I have ever visited.

There are other interesting birds at Nongdul ; Pesquet's Parrots, Green-winged King Parrakeets, Eclectus, *Opopsitta*, a Long-tailed Buzzard (*Henicopernis*), Victoria Ground Pigeons and lovely little Salvadori's Ducks, three of which were brought in when I was there. Young were reared a number of times in previous years on the large, natural ponds of the garden. Mr. Shaw Mayer found them very pugnacious and one pair only could be kept on each pond. Clutches always consisted of three eggs.

While I was at Nongdul, native men and boys were constantly coming in, sometimes large parties, to bring ant eggs and other insects, fruit, and berries, and sometimes birds. It always was exciting, and it reminds me of the good old days in Indo-China.

The local inhabitants although they had been in touch with " civilization " for thirty years only, are certainly quite superior. They always had good farms, growing quantities of sweet potatoes, other vegetables and fruits, and raising pigs and chickens. This abundance of food kept them out of the cannibalistic habits, so prevalent in other parts of New Guinea and in several South Sea Islands not so long ago. They no doubt have a sense of beauty seldom seen among primitive people. Not only do they adorn themselves with shells, feathers, leaves, and flowers, but they line all the roads and paths with ornamental shrubs and plants. They grow Buddleia, Hibiscus, Cannas, Achyranthes, Alternantheras, Lupins, and other old garden favourites, as well as annual flowers such as Marigolds, Cosmos, Coreopsis, Zinnias, etc. They will buy any seeds they can find, and when travelling, they collect cuttings of plants new to them. I had never seen before such a craze for gardening. They may astound the world if they are given a chance.

Sir Edward Hallstrom must be warmly congratulated for having established the remarkable bird centre of Nongdul. He has there experimental plantations, particularly coffee, and he has presented the Government with several of them. His Bird of Paradise collection is unique in the whole world, and thanks to him and to Mr. Shaw Mayer, a great deal of new knowledge has been gathered on this beautiful family.

X.—New Zealand

My visit to New Zealand had to be shortened to two weeks as transportation to New Caledonia was not available at a later date. I therefore was unable to see as much of that fascinating part of the world as I had intended to. I was particularly disappointed to miss the off-shore islands ; Great and Little Barrier, Kapiti and Stewart, where much of the native avifauna, now scarce or even extinct on the two larger islands, has been preserved. An endeavour to reach Kapiti failed as bad weather made it impossible to cross the rough channel. I shall have to try again soon.

The two main islands of New Zealand are very different, but both are beautiful, temperate, and green. There are volcanoes, lakes, and geysers in the North Island ; alpine ranges and lakes, barren plateaus in the centre, wet fjordland in the west, and a fertile eastern plain in the South Island. The scenery reminded me more of Europe than of Australia. It is a moist, cool, evergreen country, and there are none of the eucalyptus trees, except planted ones here and there, which give such a special character to the southern continent. A great deal of the ground has been cleared and transformed into fields, meadows, and European and American trees, widely planted, add to the oddly northern temperate look of the land. The native forest however is quite peculiar and very fine. With the exception of the large Kauris, Araucarias and other conifers of the North Island, and some Antarctic beeches, indigenous trees are not very large ; they all grow very slowly, while the northern imports reach in half the time twice as large a size as in their native countries. Monterey pines and Cypresses, European oaks, etc., grown for timber or windbreaks, soon become enormous. The native undergrowth is marvellous, particularly the ferns, which prosper even in chilly climates. Several species of tree-ferns, *Cyathea* (*medullaris* and *dealbata*) and *Dicksonia* abound. The smaller ferns, particularly the translucid ones which cover fallen logs, low trunks, and branches, are marvellous.

The clearing of much of the country has had a terrible effect on the local bird life, which was adapted to forest only. A few species have become extinct ; others only survive on islands and in other sanctuaries. They are now well protected and have begun to increase in numbers.

The avifauna never was very rich in species, as it always happens on isolated islands. But it consists of very interesting forms. The largest have been extinct for several centuries : the various Moas, some of them gigantic, large Swans, Geese, and Eagles. It is to-day easier to see European or Australian birds, all well adapted to open country, than native ones. Starlings, Blackbirds, Song Thrushes, Hedge Sparrows, Yellow and Cirl Buntings, Song Larks, Greenfinches, Goldfinches, Redpolls, Chaffinches, Rosella Parrakeets, Australian Magpies are abundant as well as Canada Geese, Black Swans, and Mallards.

My friend Dr. R. A. Falla, Director of the Dominion Museum, welcomed me at Wellington. He and Dr. K. E. Westerskov, Head of the Wildlife Bird Division, most kindly showed me the birds of the area and arranged for friends to help me elsewhere. Dr. Falla's home, on the other side of Wellington Bay, is on the edge of the forest, full of beautiful tree-ferns, and also of native birds. We had very interesting moments watching them while, over the sea, many birds, including Albatrosses and Giant Petrels, could be seen. There are two similar but entirely different small Gulls in New Zealand ; a lesser race of the red-billed Silver Gull and the black-billed Buller's Gull. Both are common, often in mixed flocks, and occur far inland.

Dr. Westerskov drove me to Mount Bruce, a very interesting station where he endeavours to propagate, under control, some of the rarer birds. The enclosures are excellent and well kept. I was thrilled to see there two pairs of Takahes (*Notornis*) the huge Porphyrio long believed extinct, which was rediscovered some years ago in the Southern Fjorland. The birds, captured young, are very tame, just coming into breeding condition. Eggs have already been laid by the older females, and they are surprisingly small for her size ; they have so far proved infertile. But they no doubt will hatch when the birds are completely adult. Very thickset, with large bills, short legs and toes, they are magnificent, having much brighter tones of blue and green than in any Porphyrios. There were a number of Weka Rails, still locally common in some districts of both the North and the South Islands, and on Chatham and Stewart Islands, I was told ; Kiwis, also still numerous in places ; one Kakapo, a very rare bird ; pairs of Red-fronted and Yellow-fronted Parrakeets, now almost confined to the smaller Islands, and a few other species. The area being a sanctuary, several wild native birds are easily observed : wonderful, large Pigeons (*Hemiphaga*) sat motionless on trees ; two Honey-eaters, the large bronzy black Tui (*Prosthemadera*) and the dark green Bell Bird (*Anthornis*) ; *Zosterops*, Grey Warblers (*Gerygone*), Robins (*Petroica*), and Wrens (*Xenicus*). Blue Porphyrios were common along the road.

Unable to cross to Kapiti Island, Dr. Falla took me to various spots on the opposite coast, where Black Ducks and Mallards were common, and also Shovellers. The introduction of the northern Mallard has been unfortunate ; it has spread through many parts of both islands and has hybridized with the native Black (or Grey) Duck (*A. superciliosa*) producing a large mongrel population. We returned to Wellington over the hills, where a good deal of forest has been preserved. Tree-ferns are magnificent, and near the east coast are small groves of the native Areca Palm (*Rhopalostsylis*), long popular in European conservatories.

The Wellington Zoo has interesting native birds and some foreign animals.

Christchurch, the main city of South Island, lies in the coastal Canterbury Plain, sheltered by the hills of Bank's Peninsula to the south. It is a well laid-out town with a beautiful park and a good museum. Mr. E. G. Turbot, who is in charge of Natural History there, knows the local birds extremely well. He and Mrs. Turbot were the kindest of hosts. We saw a number of interesting areas, particularly the large, brackish Lake Ellesmere, south of Bank's Peninsula, a waterfowl paradise. Three hundred Mute and 10,000 Black Swans live and breed there. Black Swans have increased so much that their eggs are regularly taken and sold on the Christchurch market, as their numbers have saturated the area. There were also many Ducks, Porphyrios, Stilts, White-faced Herons and Gulls. The whole population of the introduced Canada Geese, which breeds on the southern highlands, comes to Lake Ellesmere to moult and to winter.

I drove through the rich, cultivated Canterbury Plain and the open barren plateau, up to the magnificent Mount Cook National Park, where snowy peaks and huge glaciers, coming down as low as 3,000 feet, compose a magnificent scenery, reflected in milky glacial waters. There are some native birds in bush patches, but the most spectacular ones there are the Keas, a few of which could be seen flying in the valleys. They come early every morning to the hotel, perch on the roofs and beg for food at the windows. Introduced Chukhor Partridge showed up on rocks once or twice, and along the streams of the moraines, pairs of Paradise Shelducks protested loudly, and sometimes flew up, as we passed.

Another long drive along desolate highlands and over small ranges took me into higher valleys, picturesque and fertile, and finally to Queenstown, on lovely Lake Wakatipu, the long arms of which are bordered by rugged mountains. Its clear waters, along the shore, are full of enormous trout ; many ducks, quite tame, come to feed on breadcrumbs. The majority are Mallard and Black Ducks, and their hybrids of all sorts ; also New Zealand Scaup, a pretty endemic species common throughout the island. A few pairs of Canada Geese had young chicks. I was able to observe at leisure a pair made up of a male Black Duck and a hybrid female (Black Duck × Grey Teal). The latter, as well as Shovellers, Scaup, and Black Ducks could be commonly seen on pools and farm ponds throughout the neighbouring country, as well as isolated pairs of Paradise Shelducks, several with broods. Buller's Gull is common at Queenstown.

I flew back to Wellington and went by road to Rotorua, North Island, where Mr. A. G. Hall of the Wildlife Service, showed me the geysers, lakes, and hills of this interesting district. New Zealand Scaup were very abundant and tame where rivers flow into Lake Rotorua. I might add here that the White-eyed Pochard, who had invaded New Zealand from Australia in the past, has now completely disappeared.

Gulls nest in colonies on islets. At the Government Game Farm, Mr. Hall showed me interesting birds including some forty Weka Rails which had been trapped in the neighbourhood where they are numerous and prove a nuisance raiding chicken yards and eating eggs. They were to be transported to wilder districts.

On my way to Auckland I stopped at Tauronga. I had there a pleasant day with Mr. and Mrs. P. M. Roberts, visiting their aviaries of rare Parrakeets and Finches, as well as the very attractive country, and meeting my old correspondent, Mr. M. E. Fitzgerald, who was successful in keeping Blue Ducks.

The Auckland Zoo is well laid out and kept, and its Director, Mr. Woods, was very kind to me. He has under his care a good collection of native birds, particularly several Kiwis and four beautiful Kakas, the rarest of the two native Parrots, which are scarce and more difficult to keep than the familiar Keas ; they also are prettier birds. Notwithstanding great import restrictions, the general collection of the Zoo is quite a creditable one.

Of my short visits to New Caledonia, Fiji, Tahiti, and neighbouring islands, where I hope to return shortly, I only want to say that both the Red-headed Parrot Finch, near Noumea, and Peale's, around Suva, are actually very common in the grass and the bush. Some imported species are much in evidence in gardens and along roads ; Chestnut-breasted Finches and Sydney Waxbills in New Caledonia ; Avadavats and Java Sparrows in Fiji ; Common and Sydney Waxbills in Tahiti ; Common Mynahs (*A. tristis*) are tame and numerous on all the islands, while Jungle Mynahs (*A. fuscus*), Red-Vented Bulbuls and Spotted-necked Doves are also common in Fiji.

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BREEDING REPORT FOR 1962 FROM PORTOLA VALLEY

By A. H. Isenberg (Portola Valley, California, U.S.A.)

The year 1962 was one of many disappointments for breeding soft-billed birds here. My female Red Bird of Paradise laid one egg, but I no longer have a male. On introducing my male Lesser to her all further attempts ceased. The two birds have since been together and now are finishing their moult. Five Shamas were reared from two pairs, five Common Babblers ; three *Turdus cardis* ; and five Clarines (*Myadestes unicolor*). My Allen Hummingbirds nested twice but rain and wind ruined the nests and eggs. Collies Magpie Jays had three young to twelve days old when I left for a few days and upon my return all had disappeared. I suspect the pair of Oropendolas. Mexican Brown-headed Motmots nested in an earth ledge in a greenhouse but without success. Australian Struthideas again built several mud nests

and hatched young but none reared. Red-eared Bulbuls reared three. Fairy Bluebirds made one weak nesting attempt. One pair of Loochoo Robins had two young and one reared. And that seems to be my tale of woe for 1962.

1963 has been an excellent year and I shall report in full several successes such as Collies Magpies ; Struthideas ; a Hartlaub's × Knysna Touraco ; three Hummers ; seven Shamas ; Common Babblers ; *T. cardis*.

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JAVA SPARROWS

By Dr. Reginald E. B. Brown (Newcastle, N.S.W., Australia)

Concerning Mr. Goodwin's questions re Java Sparrow in the March-April Magazine. I have some of these and find them very free breeders as is usual in Australia. I think that his trouble is climatic rather than dietary as many are reared here on millet alone. As far as the blue type goes it is usual here to get mostly blue young ones even when breeding from pure whites ; the blues are exactly like wild birds. There are so many of them here that they are of no value at all, and they are *all* bred from whites. No Java Sparrows have been imported since before the war. My birds fly in a large planted aviary without shelter and they breed very easily. Food is millet, milo, wheat, soft food, green food, raw meat, white ants, and they steal any *precious* mealworms they can get (mealworms cannot be bought in Australia so are precious). This food is not specially supplied to the Javas ; it is really for the other birds, but they eat it all.

I have noticed the extraordinary friendship that exists between Javas and doves, in my case it is the Bleeding-hearts (*luzonica*). It is not unusual to see a Bleeding-heart sitting on the nest and the Java sitting on its back and a couple more nestling beside it. It is not due to cold as I have seen it when the temperature was 90° F in the shade. I have never seen this occur with the Green-winged Pigeons or Cape Doves which also share aviaries with Javas.

A man in Sydney has bred a race of cinnamon Javas. They were bred originally from whites, but their immediate ancestors were pied. They have pink eyes and consequently poor sight.

To answer Mr. Goodwin's question (March-April No., p. 68) :—

(1) I have seen it with the Bleeding-hearts.
(2) Only Bleeding-hearts.
(3) Pied, White and Blue all do it.
(4) Temperature does not matter.
(5) Breeding Javas do it too.
(6) I have seen it done at 90° F shade temperature.

THE PARROTS OF AUSTRALIA

By Joseph M. Forshaw (Canberra, Australia)

(*Continued from page 169*)

6. The Mallee Ringneck Parrot

(*Barnardius barnardi*)

The Mallee Ringneck Parrot, one of the most beautiful inhabitants of the interior of eastern Australia, was described by Vigors and Horsfield in February, 1827, from an account found in a manuscript belonging to John Latham. The locality of the type specimen was given as New South Wales. The specific name applied to the new parrot was *barnardi* in honour of Barnard the famous French naturalist. Being readily recognizable as a broadtail, it was included in the genus *Platycercus* and thus became established as *Platycercus barnardi*. This remained until Bonaparte (1854) created the new genus *Barnardius* with *barnardi* as the type.

The adult male Mallee Ringneck Parrot exhibits a showy combination of blue and green relieved by yellow and red markings. The crown and nape are bright green bordered by a red frontal band and bluish ear coverts. There is a brownish band from the eyes to the occiput where it extends in a V-shape almost to the yellow collar of the nape, which gives this species its vernacular name and is characteristic of the genus. The underparts are of a turquoise-green with an irregular orange-yellow abdominal band. The back and mantle are of a deep blue-black, while the shoulders are yellow. The secondary coverts, upper tail-coverts, and rump are green. Bluish-green is the colour of the primary coverts. Brilliant royal blue is found on the primaries, secondaries, and undersides of the wings. The upper sides of the tail feathers are green, while the under-sides show a beautiful bluish tinge. The outer edges of the secondary tail feathers are tipped with white giving a characteristic effect when fanned. It is a medium-sized stocky bird and the following measurements and details were obtained from specimens collected near Euston, N.S.W. These birds were examined by the author on 2nd March, 1963.

	Total Length, in.	*Wingspan, in.*	*Wing, in.*	*Tail, in.*	*Culmen, in.*	*Tarsus, in.*
Adult male . .	13·95	19·5	6·25	6·55	0·76	0·75
Adult female . .	13·2	19·4	6·12	6·1	0·75	0·75
Immature male .	13·1	18·85	6·35	6·5	0·65	0·65

Bill greyish-white, iris dark brown, and feet grey.

Systematic Discussion

The generic name *Barnardius* has not received universal acceptance and many ornithologists follow Peters (1937), who stated that there were no structural characters justifying the existence of *Barnardius*. Peters went further by combining all the forms of this genus into the one species. However, Condon (1941) exposed a difference in the cranial osteology of *Platycercus* and *Barnardius*. This difference is most marked in the auditory region and was used by Condon to uphold the generic distinction. The author is in complete agreement with this arrangement.

Australian authorities do not accept the combination of the eastern and western forms into one species as advocated by Peters. These two forms are distinctive in the colour of their heads. The arrangement whereby two species of the genus *Barnardius* are recognized will be used in this series and, in the author's opinion, should be universally adopted.

Barnardius barnardi barnardi, the typical subspecies, is the race whose description is given above. It is found in the semi-arid interior of New South Wales and Victoria. This race appears to reach its peak of development in the Murray Basin region. The author has collected specimens of the Mallee Ringneck Parrot from many areas in the eastern states and has reached the conclusion that the distribution of the typical race is not as widespread as has been generally accepted. *B. b. barnardi* is restricted to the Murray Basin, and the stand of Callitris and Mallee covering most of the wheat belt of New South Wales to the Queensland border. The birds inhabiting this area of better country have the blue-black mantle of the nominate race.

Mathews (1918) commented on the difficulties with the subspecific analysis of this species. The peculiarly strong degree of variation present with this bird made it possible to describe many races with a few specimens, only to be confronted with complete confusion when more material was carefully examined. In fact this confusion was rampant amongst the early authorities and subspecies were described from individual variations.

In 1912 Mathews described *Barnardius barnardi augustus* from a specimen taken at Port Augusta. This race was distinguished in having a grey-green mantle and back. The range was given as South Australia. Condon (1914) gave the range as that area bounded by Port Augusta, Yorke Peninsula, and Lake Alexandrina. He also drew attention to the presence of birds intermediate between this race and *barnardi* inhabiting the mallee areas west of the River Murray. In fact this intermediate bird is found right along the western fringe of the range of *B. b. barnardi*, and in southern inland Queensland. As the arid areas of far western New South Wales and Queensland are approached the mantle and back becomes greenish. In many birds the head becomes dark thus showing affiliation to the race *whitei*, but this appears to be



Distribution of *Barnardius barnardi*

completely variable. Adult males collected by the author at Cobar, Wilcannia, Ivanhoe, N.S.W., and St. George, Queensland had green backs. None of the many birds observed by the author in these areas showed the blue-black back of *barnardi*. The author believes that the parrots of the arid western areas of New South Wales, and of the interior of southern Queensland are of the race *augustus* and not *barnardi* as was previously believed. Although there are some differences he does not believe that the tabulation of a new race for the birds of these areas, as proposed by Condon in 1941, is warranted. The distribution of *barnardi* and *augustus* will be discussed at length in another paper the author has in preparation.

From a specimen taken at Ulooloo, South Australia, Mathews described *Barnardius barnardi whitei* in 1912. This race is distinguished from *augustus* in having the head, from the red frontal band to the yellow collar, uniform dark brown. Considerable confusion has arisen

about the colour of the back of this race. Cain (1955) was utterly confused by the variation in the skins he examined and came to the conclusion that the northern populations possessed dark backs approaching that of *barnardi*, while the birds from the southern districts of the Flinders Range had greenish backs nearing *augustus* in this characteristic. These variations in the birds of this region were attributed to a hybrid zone by Cain (1955). There appears to be no evidence to uphold the existence of a hybrid zone between *B. b. whitei* and *B. zonarius* but the evidence does support a theory of past gene flow as outlined by Condon (1962). This gene flow resulted in the brownish head and the wide abdominal band so marked in *B. b. whitei*.

S. A. White tabulated *Barnardius barnardi lindoi* from a male he collected at Mooloolloo in the Flinders Range in 1915. The description given left no doubt that it was synonymous with the above. However, the importance of the description of the immature bird given by White has been generally overlooked. In this description he draws attention to the red frontal band which is very bright and decreases in intensity with maturity. This is most interesting when it is compared with *B. zonarius*, the young of which often show red frontal bands which are lost with maturity. White also made the observation that these birds of the northern Flinders Range resemble *B. zonarius* in their habits and habitat.

Much interest was aroused in the ornithological world with the description of *Barnardius barnardi macgillivrayi* by North in 1900. Originally described as a new species, the Cloncurry Parrot was reduced to a race by the R.A.O.U. Checklist in 1960. This markedly distinctive race is an excellent example of isolated development. The plumage of the Cloncurry Parrot is of a far more delicate hue than that of *B. b. barnardi*. The adult male differs in having the mantle and back light green and in lacking the red frontal band, the head being a uniform green with remnants of the brownish band from the lores to the occiput. The lower parts of the ear coverts are bright light blue merging into a pastel bluish-green on the sides of the head. The abdominal band is more pronounced and even, and is of a pale yellow colour. The lesser wing coverts are green instead of deep blue. Immatures are slightly duller in plumage and possess a faint orange-yellow frontal band. The type bird, a female, was collected by W. Macgillivray at Leilavale Station on the Fullarton River about 30 miles east of Cloncurry, North Queensland. The details of this specimen are as follows :—

Total Length, *in.*	*Wing*, *in.*	*Tail*, *in.*	*Culmen*, *in.*	*Tarsus*, *in.*
13·5	6·4	7·2	0·8	0·8

Bill was bluish horn colour, paler at the tip ; feet were blackish-brown.

While inspecting the aviaries of the Marquis of Tavistock, Mathews

noticed a strong difference in the plumage of a Mallee Ringneck Parrot, thought to be an adult female, but later proved to be a male. This bird was richly coloured with an abundance of blue ; the entire breast was blue-green. The yellow collar was only faintly indicated by a small yellow patch on each side of the neck, while the abdominal band was completely absent. He used this bird as a type to describe a new species, *Barnardius crommelinae*. The fact that this bird was an aberrant cyano form did not impress Mathews and it was figured in a colour plate some two years later. Subsequently many aviculturists stated that they had seen similar birds and many stated that they had successfully reared such variants as members of an otherwise normal brood. The author examined a bird answering the above description in the skin collection of the Australian Museum. This specimen (No. 014845) was collected in the Coonamble district of New South Wales. Another specimen (No. 014842) collected in the same area was a typical *barnardi*. *B. crommelinae* was described from an aberrant form and has no claim whatever to validity.

General Discussion

Although by no means confined to Mallee regions, the Mallee Ringneck Parrot is aptly named, for few areas of this distinctive country in the eastern states are devoid of populations of this brilliant parrot. Open forests, timber bordering rivers, and watercourses, Native Pine (*Callitris* sp.) stands and Mulga groves are other habitats of this species. *B. b. macgillivrayi* appears to differ somewhat from the other races in showing a marked preference for large eucalyptus trees growing along watercourses. As the exact southern limit of this race is unknown it cannot be ascertained if the distribution is restricted by this habitat preference.

Just as it is uncertain how far south the Cloncurry Parrot is found, the northern limits of the southern subspecies are ill-defined. The Windorah area of Queensland and Coopers Creek in South Australia seem to be the most northerly observation reports. The western limit of distribution lies roughly on the 138th meridian of longitude. Primarily an inland species of the semi-arid region, the Mallee Ringneck Parrot visits the coastal areas only in the south-east of South Australia.

Barnardius barnardi is frequently observed in pairs or small family parties feeding on the ground or in the outer branches of a tree. Their plumage, although showy and brilliant, harmonizes with the surroundings and generally an observer is unaware of the presence of these parrots until they take to the wing. While flying through the trees the flashes of green and blue exhibited by the birds are most impressive.

The flight is undulating and closely resembles that of the Rosellas. The wings are left extended between beats, not withdrawn into the



Copyright] [J. M. Forshaw

Open Forest and Mallee near Mildura, Victoria : Haunt of the Mallee Ringneck Parrot

[To face p. 244



Copyright] [*N. Chaffer*

Female Mallee Ringneck Parrot (*Barnardius barnardi*) at the Nesting Hollow

[*To face p.* 245

body as in some other species. When undertaking a flight from one tree to another, *B. barnardi* usually flies close to the ground rising with the tail fanned before alighting. On the banks of the Murray and other large inland rivers, where the habitat is large River Gums, the birds travel from the topmost branches of one tree to those of another at a considerable height. These flights, however, are of a short duration. While in flight the call is generally employed.

The call of the Mallee Ringneck Parrot is a high pitched whistle note repeated several times. A harsh call similar to that of the *Platycercus* species is also heard. While feeding in the branches of trees a chattering is often emitted.

Seeds of grasses and herbaceous plants form the main diet of this species. Eucalyptus seeds and tips are also relished. In the western areas of New South Wales and in South Australia the seeds of the Paddy Melon (*Cucumis myriocarpus*) and the Wild Bitter Melon (*Citrullus lanatus*) are consumed in great quantities by the Mallee Ringneck Parrot. The fruits of various shrubs such as the introduced tobacco plant (*Nicotiana glauca*) are also eaten. *B. barnardi* does eat cultivated fruits but, because of its reluctance to frequent habitated areas, is not regarded as a pest. In winter the fruits of the Mallee Gums are chewed to gain access to the seeds, while the flowers of these and the Sugar Gums are readily eaten when available. There is an interesting record of a Mallee Ringneck Parrot extending this fondness for flowers to include cultivated violets and freesias with considerable damage being the end result. Stomach and crops of *B. barnardi* examined in 1935 by two Australian authorities revealed seeds of various grasses, seeds of a *Solanum* sp., very small seeds of a *Portulaceae*, vegetable matter, grit and sand, and pieces of charcoal. A stomach of a bird taken by S. A. White in the Flinders Ranges in 1913 was entirely filled with eucalyptus seeds. The crop of a *B. b. macgillivrayi* examined by W. Macgillivray in 1914 contained various grass seeds. The crop of *B. b. augustus* from Cobar examined by the author in 1962 contained many very small brown beetle-like insects. As the crop also contained a considerable quantity of sand it cannot be ascertained if these insects were deliberately eaten by the bird or whether they were unknowingly devoured with the sand.

As mentioned, this parrot is not plentiful in the neighbourhood of cultivated farmlands and human habitation. In this way it differs from the *Platycercus* sp. and does not appear to be able to adapt itself to encroaching settlement. As the Mallee and open forest country are cleared for wheat and sheep the Mallee Ringneck Parrot gradually retreats. Although still generally considered numerous, it appears to be declining in parts of its range. *B. b. macgillivrayi* is not the subject of many reports owing to its isolation, but it does appear to be holding its own well on the upper tributaries of the Diamantina River.

The brilliant colour of the males is generally the strongest indication of sex. Females and immatures are much duller than the adult males, particularly on the back and rump, which are generally dark grey-green in colour. This makes the birds easy to sex in the field especially when observed in flight. The female also possesses a smaller head and a narrow pointed upper mandible as in the Rosellas. The " wing-stripe " is also a valuable aid, with the males losing it with their first complete moult and the majority of females retaining it.

The close relationship to the *Platycercus* sp. is revealed by the mating display, which is identical with that of the Rosellas. The male assumes a slightly crouched position before the female and squares his shoulders with slight vibrations. The tail is fanned a little and excitedly moved from side to side with a constant chatter emitted. The head is occasionally bobbed up and down. The mating period is often a time of squabbling and fighting as lone males attempt to impress a mated female. During the pre-nesting time *B. barnardi* becomes pugnacious towards his own in a manner resembling all the other broadtails.

As August heralds in the breeding season, which is greatly governed by climatic and environmental conditions, activity in the form of seeking suitable nesting sites reaches its zenith. A hollow limb or hole in the branch of a eucalypt is chosen and considerable time is spent preparing the site for the laying of the eggs. Dead trees are generally chosen but living gums along rivers and watercourses or by dams also provide many suitable nests. The bottom of the hollow is lined with decayed wood and a shallow excavation is made for the eggs.

If the season is favourable the breeding season commences in August and often two broods will be reared. A dry period or a severe drought restricts breeding and the birds may not go to nest until October or November and indeed many will not nest at all.

Four to six, usually five, pure white eggs are laid. These are rounded oval in shape and the texture of the shell varies from coarse to fine. The eggs are slightly glossy but rapidly become dull and nest stained. An average egg would have the measurements 1·2 by 0·97 inches. Lendon (1940) describes the eggs of the Cloncurry Parrot as being appreciably smaller than those of *B. b. barnardi* and being smooth, dull white, and slightly larger at one end, the average measurements being 1·08 by 0·86 inches.

Incubation, which commences after the laying of the second egg, is carried out only by the female and is of three weeks duration. During this time she usually leaves the nest for short periods in the early morning and in the evening to feed. The cock bird generally sits in a nearby tree and warns of any approaching danger. The young are born covered in white down and are carefully brooded by the hen for the first few days. As the nestlings grow the male is allowed to assume his share of the feeding duties. The nestling period lasts approximately

five weeks. On leaving the nest the young remain with their parents thus accounting for the family parties usually observed.

Hybrids in the wild state with this species are very uncommon. However, as discussed previously, mutations of various kinds are sometimes reported. There is a record of a pair of lutino birds taken from a nest on the Murray River in 1927. These birds were of a pale yellow colour with pink feet and eyes.

The Mallee Ringneck Parrot has generally been considered uncertain as an aviary bird. Although it does not take to captivity as readily as the Rosellas, reasonable care and attention should result in satisfactory results with this species. New arrivals should be guarded against chills, but once acclimatized it is a hardy species. Two characteristics darken its popularity in captivity. It is very pugnacious towards other species and it attacks wood with its strong bill reducing perches and supports to splinters in a very short time. In spite of these disadvantages it is a beautiful inhabitant of an aviary and its prowess as a whistler endears it to many aviculturists.

The diet for birds in captivity should consist of sunflower seeds, oats, wheat, plain canary seed, and millet in the proportions of 2 : 1 : 1 : 2 : 1, while individual birds will relish corn. A plentiful supply of green food must be made available at all times while apples, pears, and other fruits are always appreciated. Many breeders have had considerable success offering a limited supply of mealworms and this should be experimented with by interested owners.

The successful breeding of this bird in Australia is not common. The Cloncurry Parrot has, in recent years, been established in collections in this country and it is to be hoped that this beautiful race proves to be an exception with the species and that it increases substantially in numbers. For breeding purposes a pair of Mallee Ringneck Parrots should be housed separately in a flight, which is not in close proximity to any aviary containing other broadtails. A number of nesting logs and boxes should be provided so that the birds are able to choose their nesting site. Once the birds have commenced breeding they should be disturbed as little as possible. If a second brood appears likely the young of the first nest should be taken from the parents as soon as possible.

A number of hybrids between this species and other broadtails have been recorded in captivity. The most note-worthy of these was the breeding of a hybrid with the Red-backed Parrot (*Psephotus haematonotus*) at London Zoo in 1933. The author recently examined skins in the Australian Museum of a hybrid with the Yellow Rosella (*Platycercus flaveolus*) and, although there is a record of this hybrid occurring in the wild state, it is almost certain that these skins were from captive birds. The hybridization of the two members of the genus *Barnardius* in captivity is comparatively common. There is a record of a hybridization

between the Cloncurry Parrot and the Indian Ringneck Parrot (*Psittacula krameri*), but as no details are given the authenticity of this report must be strongly questioned.

Renowned for its beauty, admired for its grace, the Mallee Ringneck Parrot occupies a high position in the parrot group. When winging its way through the Mallee areas of the Australian countryside, or when flying in an outdoor flight it never fails to impress the observer. Truly, *Barnardius barnardi* is another regal inhabitant of " the Land of Parrots ".

Acknowledgments

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(*To be continued*)

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PSITTACINE BIRDS IN CALIFORNIA

By DAVID WEST (Montebello, California, U.S.A.)

It has been many many years since there has been any mention of the Mexican Thick-billed Parrot in the MAGAZINE. Members may be interested to know that there are several pairs here in California and Arizona, although apparently the closely related Maroon-fronted Parrot is totally unknown in captivity.

For many years the San Diego Zoo displayed three specimens of this fine parrot, and from the writer's limited observation they appeared to be a true pair and an odd bird. The brilliant yellow under the wings shows up very clearly when they are in flight. I do not know if these birds made any breeding attempt although nests were provided should they be so inclined.

I have also seen a very tame and talking specimen which chattered a great deal in a rather indistinct manner. This bird was very aggressive but also very intelligent.

There appears to be no sexual distinctions and no apparent difference in size between the sexes.

European members might enjoy hearing that there are some Blue Fischer's Lovebirds here in California. I have two specimens which were purchased from a local dealer who had obtained the birds from a breeder who stated he had five or six more at home. The bird has a whitish-grey head and the body is a pale sky blue. When seen next to a Blue-masked it is readily clear that the bird is a true Fischer's and not a cross between Fischer's and a Blue-masked.

Many years ago my father had a Blue Fischer's, and Bernard Roer in Arizona also has had Blue Fischer's. They are not any prettier than the Blue-masked Lovebird, which is a very handsome mutation.

Mr. Rudkin, Jr. in Fellmore continues to have very outstanding breeding results with his lutino and blue Ringnecks. In 1961 he mated a male lutino to a female blue and reared one green male split for lutino and blue and one lutino female split for blue. These two youngsters have now been paired up and have eggs this year.

In 1962 the lutino male and his mate bred four female lutinos, all split for blue. Thus the groundwork has been laid for the eventual rearing of an albino Ringneck.

Recently I was fortunate in securing six specimens of the Malaccan Long-tailed Parrakeet. These are especially lovely, but the sexing of them appears to be somewhat confusing. At first it was thought there might be three pairs, but some of the females are now moulting and are looking suspiciously masculine as the moult progresses. To date they have made no noise, and appear to be a rather ill-tempered bird, each of the six appearing to prefer to sit quite alone.

These birds have steadfastly refused to eat any fruit or greens, and look wonderfully healthy on a diet of water and sunflower seed.

Sometimes one is disappointed when seeing a living specimen previously known only from an artist's plate. However, the Long-tailed is a truly beautiful and regal parrakeet and is far superior to the plate in the old Reichenow work.

At about the same time the Long-tailed Parrakeets were obtained a second pair of Slatey-headed Parrakeets were obtained. My original pair are extremely handsome, and like most asiatic parrakeets get a wonderful sheen to their plumage. The male's tail grows to a very great length and the quiet but elegant colouration is most pleasing. The Slatey-headed like all types of fruit and greens, and pay no attention to other small birds in their aviary.

The original pair have been seen to mate and feed repeatedly during the early spring months, but have never laid, and as far as I can tell, have never entered any of the nest boxes provided. They are quiet, and their call and display greatly resembles that of a Plum-head.

My own breeding results have been rather disappointing this year. Neither the Grand, Red-sided or Solomon Island (dwarf form) were successful, although a number of eggs were laid. Quite recently a dealer here had an all red female Eelectus, presumably a Cardinal Eelectus. From a study of skins it would appear that the colouration of the females varies a great deal from locality to locality, while the males all appear quite alike.

Mr. and Mrs. Miser of Stanton, California, are hand-feeding a three-week old hybrid cockatoo, the result of a mating from a male Lead-beater's and a female Umbrella. This should prove a most interesting chick, and they are naturally quite elated over their success.

* * *

CLÈRES—1963

By J. DELACOUR

The weather has been just impossible in 1963. After a cold and unusually long winter, came a dull, chilly spring, followed by a wet summer without warmth. The result has been that regular breeding pairs of tropical birds as, for instance, Rajah Shelducks and Orinoco Geese, simply did not come into breeding condition and never laid. Others only produced infertile eggs. It was even worse with doves and small birds. Some obstinate nesters, however, did rear a few young. There were a number of Rheas and one Stanley Crane, a few geese : Ruddy-headed, Ashy-headed, Magellan, Cereopsis, Greenland White-fronts, Blue and Lesser Snow Geese, also White-necked Swans.

Snow and Blue Geese, of which there are a dozen pairs or so in the park, rear their own young at liberty. This year a blue pair had one blue and two white goslings. They showed a curious behaviour this season. Every year, a few young are reared under hens as well ; when about two months old, these were released into the park, where they joined the other Snow Geese and lived in peace with them. But this time the park geese, for an unknown reason, would not tolerate the young reared elsewhere and attacked them savagely, killing one before they could be removed. A few more pairs of Snow Geese live in the deer park, across the road. There are full-winged birds in both flocks, but they never mix, and they would fight if they came into contact. Yet Snow Geese belong to a gregarious, non-quarrelling species !

Two pairs of Nénés again laid two clutches each of infertile eggs, a great disappointment. A good many ducks were reared, some by their parents. There are many free-flying Carolinas, Mandarins, Bahamas, Chilean Pintails, Shovelers, Garganeys and Green-winged Teal on the lake and streams. Also Chiloe Wigeons, which are not very good stayers in the spring, when pairs wander away in search of a hidden territory where to nest ; so a few are lost. But, this year, a pair returned in September with four young—others had been reared on the lake and they all fly together. The most interesting ducklings were Hawaiians (Koloa) now a very scarce species in its native islands, probably fewer than 200 being left.

Among the game birds were several young Sonnerats and Ceylon Junglefowl and a Brazilian Curassow. Seven day-old wild Turkey chicks sent by Professor Ghigi, from Bologna, arrived in perfect condition and were reared easily. They belong to the northern race (*silvestris*), taller and darker than the Florida Turkeys (*osceola*) I have had so far.

The best doves reared this year were Common and Brush Bronze-wings, many Green-winged, Grey-headed (*caniceps*), Grayson and White-headed Pigeons, also three Crimson-winged and three Aymara

Parrakeets (*Myiopsitta aymara*). The latter were imported for the first time a few years ago. They are small and pretty in shape and colours (dark grey, pale grey, and green). Coming from the high barren plateaus of the Southern Andes (Bolivia, northern Argentina, and Chile), they are very hardy; they also have the great advantage of respecting vegetation, and they do not damage the shrubs of their aviary to any appreciable extent, a rare quality among parrakeets which Queen Alexandras and Bourkes only share with them, as far as my experience goes. Two pairs of Aymaras laid late in the summer in ordinary small nesting boxes, one of them made of metal, hung under the roof of the shelter. The young remained long in the nests, which became so dirty that we had to clean them. They feed on seeds, but used a great deal of softbill mixture when rearing their brood.

A pair of Schutti's Touracous laid infertile eggs three times.

We received many new birds this season, among which a pair of West African Ostriches from the Paris (Vincennes) Zoo, where sixteen were reared last year, twelve of them by the parents themselves, a rare occurrence in a northern climate and a public park. Many Parrot Finches, both Red-headed and Blue-headed, arrived from the New Hebrides and New Caledonia, as well as two pairs of the diminutive Polynesian Duck (*Anas superciliosa pelervensis*), which does not seem to have been imported before; it is considerably smaller than the Australian form, and prettier.

I made last year a new duck garden across the road, where the rarer species are kept in peace, away from visitors. It should prove successful in breeding the more difficult birds. It also provides me with a welcome haven. The tropical house is being restored, and the halls of the chateau, destroyed by fire in 1939, have now been turned into indoor aviaries, so that we shall have much more room for small and medium-sized delicate birds.

* * *

NEWS FROM THE BERLIN ZOOLOGICAL GARDEN

By Dr. A. Wünschmann

Since opening the new Bird House and Pheasantry in December, 1962, the bird collection of the Berlin Zoo has been increased by a great number of interesting new arrivals and donations and a lot of remarkable breeding successes.

As a gift we received in January, 1963, a pair of Yellow-casque Hornbills (*Ceratogymna elata*), a species from Western Africa, which is seldom to be seen in Zoological Gardens. In the London Zoo a specimen lived for more than thirteen years (Flower, 1925). In the wild the fruit of the Oil Palm is the food these birds prefer, but in captivity they have settled down well, living on a mixture of bananas, oranges, apples, and rice with meat or freshly killed mice.

On 1st May, 1963, for the first time a pair of the White-breasted Guineafowl (*Agelastes meleagrides*) arrived at the Berlin Zoo. It is believed that this species, which inhabits the forests of Liberia and the Gold Coast, has never before been in a European zoological garden. The two birds were trapped by the Dutch animal importer Frans van den Brink himself. Here they spend most of their time in the branches of their cage and are fed on a diet very rich in insects. Although there are no reports about their breeding biology in the wild, the Zoo hopes that it will be possible to breed these rare and beautiful Wood-Guineafowl in due time.

In July, a collection of birds from the New Hebrides arrived, collected by Mr. Bregulla, including two Red-bellied Fruit Doves (*Ptilinopus greyii*), two Sacred Kingfishers (*Halcyon sancta*), two Chestnut-bellied Kingfishers (*Halcyon farquhari*), and two Red-headed Parrot Finches (*Erythrura psittacea*). *Ptilinopus greyii* is like any *Ptilinopus*, in habits, but perhaps more apt to fly from one island to another, so that it has been reported from New Caledonia, Loyalty Isles, New Hebrides, Banks, Torres, Santa Cruz, Reef Isles, and Gower Isle. Though *Halcyon sancta* is quite widespread and common in the New Guinea region, *Halcyon farquhari* is a more local, rare species, known only from the isles Malekula, Malo, and Santo.

Other arrivals worth mentioning include two flightless Steamer Ducks from the Falkland Islands, one Ross's Goose, ten Lesser Flamingos, two of the carnivorous Weka Rails from New Zealand, two American Wood Ibises (*Mycteria americana*), one Goliath Heron, two Boat-billed Herons, five Ocellated Turkeys, one Brush Turkey, two Pied Imperial Pigeons (*Ducula bicolor*), two White-breasted Sea-Eagles from the Philippines, three Scops Owls, two Great Black Cockatoos, two Chilean Conures, two Montezuma Giant Caziques, one Wagler's

Giant Cazique, one Great Himalayan Barbet, one Guiana Motmot, two Peruvian Cocks of the Rock, two Quetzals, and two each of the Speckled, the Blue-naped, and the Red-faced Mousebird.

On 20th February, 1963, the male Japanese Stork (*Ciconia ciconia boyciana*), one of the rarest birds in the Berlin Zoo, died of senility. Acquired from Hagenbeck, Hamburg, on 23rd June, 1933, the Japanese Stork was one of the ninety-one animals, which had survived World War II in the Berlin Zoo, in the end being the oldest zoo inhabitant of all. In Japan this sub-species is nearly extinct in the wild. Only eleven specimens are left, and they have not been propagated in 1962. In the Berlin Zoo the Japanese Stork lived together with a female European White Stork. Once the pair nested, but the eggs did not develop.

The hatching and raising of a young European Flamingo, the first one ever bred in a German Zoo, was the most welcome breeding success of this season. The flamingo colony, consisting of fifty-six birds, is living isolated from the zoo visitors on a small peninsula in a lagoon with a regulated water level, where a load of mud had been brought this spring. After years of experimenting to find out the best breeding conditions, this time at last the flamingos, European as well as Chilean, punctually began to build their nest hills. On 16th May, the first egg was laid, followed by four others. Four pairs of the European and one pair of the Chilean sub-species were sitting on the eggs persistently. On 25th June, the European Flamingo egg, laid on 25th May, hatched.

The strong chick left its nest on the third day and was fed not only by its parents, but also by others standing near. Being now more than six weeks old the young flamingo has grown considerably. The other eggs remained undeveloped.

The waterfowl collection of the Berlin Zoo was increased by a great number of breedings, among which those of three Bar-headed Geese, five Blue Geese, two Common Shelducks, a Cereopsis Goose, five Emperor Geese, three Black-necked Swans, four European Eiders, and a Common Cormorant are noteworthy.

Furthermore a Black-footed and a Humboldt's Penguin, two European White Storks, three Hill Mynas, and a Great Crowned Pigeon were hatched in the Gardens.

Repeating the breeding success of last year the Snowy Owls hatched and raised three young ones. The Giant Eagle-Owls have two young ones. Three young Black Vultures, taken away from their parents, have been raised by hand with pre-digested food by our head keeper, Mrs. Johst, who is also raising just now a young Paradise Crane, hatched on 16th July.

* * *

LONDON ZOO NOTES

By J. J. Yealland

A fine specimen of Fischer's Whydah, a male in full breeding plumage, has been presented by Messrs G. H. and J. R. Newmark and is the first of this species to be in the collection. Fischer's or the Straw-tailed Whydah (*Vidua fischeri*) inhabits the thorn bush country of parts of eastern Africa. It is said to be brood parasitic mainly on the Purple Grenadier Waxbill, but, as Dr. Friedmann points out (*Bull. U.S. Nat. Mus.*, 223, 1960) the host species are not known with certainty.

Another new species is the Black-faced Solitaire (*Myadestes melanops*), a native of Costa Rica.

Other arrivals of particular interest are a Booted Eagle (an immature bird of the light phase), two Lesser Kestrels, a Spoonbill, a pair each of White-eye or Ferruginous Ducks, Garganey Teal and Chilean Pin-tail, two Gull-billed Terns, a pair of Painted Quail, a pair of the Straight-crested Helmet-Shrikes (*Prionops plumata poliocephala*), a pair of Red-crowned Tanagers (*Tachyphonus coronatus*), a pair of Red-eared (or whiskered) Bulbuls, White-crested and Necklaced Jay Thrushes, a Yellow-backed Whydah, a Peters' Twinspot and a pair of Blue-headed Waxbills.

One Barn Owl was reared, the first to be bred here since 1905. Two Blue-headed Parrots presented in March after being in the donor's possession for ten years, are very unlike the typical birds, being smaller and more slim, of a paler blue with paler ear-coverts and no trace of red on the throat. They may be what Massena and Souancé called *Pionus cobaltinus* and although the original description mentions a red front, the Type may presumably have been an immature bird. "*P. cobaltinus*" inhabits Colombia : it was first described in 1854, but is not recognized by Peters (Check-list of Birds of the World, iii, 1937).

* * *

BRITISH AVICULTURISTS' CLUB

The eighty-first meeting of the Club was held at the Windsor Hotel, Lancaster Gate, London, W. 2, on Monday, 16th September, 1963, following a dinner at 7 p.m.

Chairman : Mr. K. Norris.

Members of the Club : A. W. Bolton, Miss K Bonner, M. K. Boorer, R. A. Copley, E. A. Dracup, Miss R. M. Ezra, Mrs. R. Goodman, L. W. Hill, F. E. B. Johnson, Mrs. P. Johnstone, C. D. Jolly, Miss E. M. Knobel, J. Kuttner, C. Marler, G. S. Mottershead, Sir Crawford McCullagh, Bt., W. R. Partridge, J. W. Peel, A. A. Prestwich, R. C. J. Sawyer, Newton R. Steel, A. J. Swain, J. J. Yealland.

Members of the Club, twenty-four ; guests, twenty-six ; total, fifty.

The Eighteenth Annual Conference of the International Union of Directors of Zoological Gardens, under the Presidency of Mr. G. S. Mottershead, was held at the Chester Zoological Gardens, 9th–13th September, 1963.

The Club was very fortunate in that some of the Delegates were passing through London and so we were able to welcome : Professor Dr. and Mrs. Ermanno Bronzini (Rome), Dr. Franco Cuneo (Naples), M. Jean Delacour (Clères), Mr. and Mrs. Curt af Enehjelm (Helsinki), Mrs. Jan Landowski (Warsaw), Professor Dr. Jacques Nouvel (Paris), Dr. Zdenek Veselovsky (Prague), Miss Claire Wenner (Naples), and Dr. Wilhelm Windecker (Cologne). In addition, we had two visitors from Trinidad, Mr. and Mrs. M. B. Stoute.

The Club's traditional birthday cakes were presented in anticipation to M. Jean Delacour and Sir Crawford McCullagh, Bt.

There was then a conversazione.

ARTHUR A. PRESTWICH,
Hon. Secretary,

* * *

NEWS AND VIEWS

Mr. Oscar Seppelt, Patron of the Avicultural Society of South Australia, is to be very heartily congratulated on attaining his ninetieth birthday, on 13th July. We, on this side of the world, are happy and proud in that we too, have a nonagenarian, our former Hon. Secretary and Treasurer Miss E. Maud Knobel. May they both enjoy many more years amongst us.

* * *

We hear that P. Frampton, N.S.W., has bred sixty-two Blue-faced Parrot Finches from six pairs : Geoff Haywood, Victoria, has bred forty-eight Scarlet-chested (Splendid) Parrakeets : Squadron-Leader S. A. Lucksford has bred three Red-bellied Conures (*Pyrrhura frontalis frontalis*) : The Keston Foreign Bird Farm has bred a nest of three Indian Siskins (*Hypacanthis spinoides*) : Mrs. D. Grunebaum's Blue and Yellow Macaws are sitting on three eggs.

* * *

J. D. Money, the Agent for Leeds Castle, Maidstone, reports : " The Andean Parrakeets at present have three young in the nest-box, and the Plumheads have two (the survivors of five hatched), but they have had to be separated from the parents.

Other species bred this year are Pennant's, one ; Golden-mantled Rosella, four ; Princess of Wales's, five ; Bourke, three ; Elegant, four ; Black-cheeked Lovebird, one ; Fischer's Lovebird, three. We have also bred Long-tailed Grass Finches and Star Finches."

* * *

In 1835, Major (later Sir) Thomas Livingstone Mitchell built a stockade near the junction of the Darling and Bogan Rivers, in New South Wales : this he named Fort Bourke after the then Governor, Sir Richard Bourke. It was near here that he found the charming parrakeet subsequently known as the Bourke, in 1838.

Until within the last thirty or so years " Back o' Bourke " was understood to indicate utter remoteness. Now Bourke is a mere two air-hours from Sydney.

* * *

Charles Everitt reports the breeding results in the Edward Marshall Boehm aviaries up to 30th July, as :—

Independent Young

Masked Wood Swallow	*Artamus personata*	5	
White-browed Wood Swallow	*Artamus superciliosis*	1	
Fairy Blue Wren	*Malurus cyaneus*	4	
Red-eyed Bulbul	*Pycnonotus nigricans*	3	
White-cheeked Touraco	*Tauroco leucotis*	3	
Golden-crested Mynah	*Mino coronatus*	1	
Pigmy Kingfisher	*Ispidne picta*	2	
Common Hoopoe	*Upopa epops*	1	
Black-headed Sugarbird	*Chlorophanes spiza*	1	(4th generation)
Fairy Blue Bird	*Irena puella*	2	

Young in Nest

Natal Robin	*Cossypha natalensis*	3
Black-headed Oriole	*Icterus gularis*	3
Red-winged Starling	*Onychognatus morio*	2

On Eggs

Fairy Blue Wren, Pigmy Kingfisher, Palawan Peacock Pheasant, Orange-breasted Cotinga *Euchlornis jucunda* and Black-throated Cotinga *Pipreola rieferri.*

* * *

Reg Partridge is always so fully occupied with his very many birds that he has little time for writing of the interesting events in his aviaries. It may therefore not be out of place to report that his young Patagonian Conures have now left the nest. The three young birds are exact replicas of the parents except that they have white upper mandibles, whereas the adults have black. An unusual cock Bourke has been bred ; it has red eyes, very pale body feathers, and the wings are suffused with yellow. Two Rothschild's Grackles have been reared, also about forty Vulturine Guineafowl.

* * *

A. W. Bolton is busy stocking his new 63 by 18 feet aviary. This enclosure contains two small ponds and a waterfall, and will eventually contain a large and varied collection. Breeding results this past season have not been particularly good but some nice birds have been reared. Redrumps had three in their first nest (one normal hen, one yellow hen and one possibly split cock) and six in the second (three yellow hens and three possibly split cocks). The surprising thing about this

breeding pair is that the normal hen was five years old, but the cock was only eleven months old. Golden-mantled Rosellas had two young but refused to feed them. Cockatiels laid large clutches of eggs but the cock birds failed to do their share of sitting and only two young ones were reared. Hahn's Macaws, one pair reared two good young ones, and a second pair had young dead in shell. The Rock Pebblers had clear eggs.

* * *

Further to my notes in the May-June number of the Magazine on the longevity of pheasants. Search has revealed a few further records:—

Reeves's Pheasant. P. J. Lambert (*Avicult. Mag.*, 1936, p. 14) says : " I personally know of a Reeves cock that was hatched before the Great War and is still healthy and happy—its tail length exceeds 5 feet." This would make it over 21 years old.

Golden Pheasant. P. J. Lambert (loc. cit.) : " I know of a Golden cock in the North of England that is over 20 years old ".

Silver × *Reeves's Pheasant.* Major S. S. Flower, " Further Notes on the Duration of Life in Animals—iv. Birds " (*Proc. Zool. Soc. London*, Ser. A, vol. 108, p. 226, 1938) cites : " Hybrid Silver × Reeves's Pheasants in the Sofia Z.G., one that lived for 20 years, and one still living at 20 years, have been recorded (Adolf Schumann, Mitt. Kön. Naturwiss. Inst. Sofia, **2**, 1929, p. 52)."

Argus Pheasant. Major Flower (loc. cit., p. 227), " London, ♀, presented 22nd May, 1922, living 2nd October, 1937, 15 years 4 months 10 days. At Clères, in France, Monsieur J. Delacour, F.Z.S., has had both male and female Crested Argus Pheasant living for about the same period as the London maximum."

Major Flower also lists : " Twenty *Silver Pheasants*, genus *Gennaeus*, average 12 years $10\frac{3}{4}$ months ; 5, of the 20, left alive. Of all the genera of pheasants *Gennaeus* appears to be the hardiest in captivity.

Twenty *Peacock-Pheasants*, genus, *Polyplectron*, average 8 years 9 months ; 4 of the 20, being left alive."

A. A. P.

* * *

REVIEWS

THE BIRDS. By Roger Tory Peterson and the Editors of *Life*. Time Inc., New York, U.S.A., 1963, Price $3·95.

This book deals with all aspects of bird life, starting with the evolution of birds and finishing with a discussion of the inter-relationships of birds and humans.

The author writes in his usual clear and easy style that the veriest beginner will find both interesting and understandable but which never sacrifices accuracy for the sake of popular appeal. Even knowledgeable ornithologists, or those who like so to consider themselves, may learn from this book and will certainly appreciate the amount of research and study the author must have gone to in order to get all his facts right.

The book is very profusely illustrated with both black and white and coloured drawings by the author, who is, of course, one of the world's leading bird artists. Also by a great number of photographs, many of them in colour. The illustrations do not only beautify the book, but most of them serve to illustrate or emphasize some point in the text and do this very effectively. A Santa Cruz islander catching honey-eaters ; Glaucous-winged Gulls waiting for scraps around two feeding bears ; close-up colour photographs of the eyes of six different species and a Skimmer skimming are but four pictures that can be singled out here from among a multitude of equal interest and merit.

No doubt specialists will be able to find, or imagine, a fault here or there. The reviewer, for example, thought that the generalizations on behaviour were perhaps a shade too emphatic and wished that the author could have given us some observations and examples from his personal experiences instead of all the standard ones. Probably, however, the reviewer is biased here by his past enjoyment of the author's " Wings over America ", in which many interesting personal anecdotes are given, and by familiarity with most of the classical examples of bird behaviour.

The book can be unhesitatingly recommended to anyone interested in birds regardless of how much or how little they know.

D. G.

* * *

THE STRANGE WORLD OF BIRDS. By John Wakefield. Iliffe Books, Ltd. London, 1963. Price 25*s*. net.

This book sets out to give a general picture of many aspects of bird life, and thus to awaken a deeper interest in bird spotters and bird keepers. As the title suggests there is a tendency to emphasize those facts which appear strange or unusual to the average lay reader. Much

of this may irritate some who are well advanced in aviculture or ornithology, they should remember that such an approach is very likely to capture and hold the attention of anyone who is just beginning to take an interest in birds.

Frankly, the reviewer was prejudiced by both title and dust-jacket (a lurid pink) and started reading fully prepared and expecting not to like the book. He ended it with his prejudice gone and quite a high opinion of it. The book is largely a compilation but a careful and painstaking one, and the author quotes his sources of information wherever these are not common knowledge in ornithological circles. There are one or two errors (as in many books) but most of the information is correct.

The book is illustrated with eight plates of photographs and very many black and white drawings. These vary in quality but most are competent and effective. The all too human face of the Frogmouth on page 45 makes this drawing (regardless of its ornithological merits) more than worth the price of the book.

D. G.

* * *

CORRESPONDENCE

A WARNING—THE DANGER OF TOXIC CHEMICAL SPRAYING TO AVICULTURE

First I have a " Tale of Woe " to unfold. I was building up quite a nice little flock of Parrot Finches and had them breeding nicely. They are very fond of seeding grass—especially when breeding—I generally go out to the Bush to get this—but I have been very busy and was unable to drive far. I knew where there was a small patch in an outer suburb. So I drove over and collected it. As I got out of the car a small flock of Diamond Sparrows flew off it. I collected a double handful of the grass and took it home to the Parrot Finches—next morning all the Parrot Finches were sick. I drove over immediately to look if the grass was all right, and found it had been sprayed—it seems it takes three days from the time the spray is put on for the grass to wither—when I picked it, it looked perfect. Otherwise, of course, I wouldn't have touched it.

Well, to cut a long story short, I lost nine coloured Reds—two nests of young Reds, one of three and one of four—one Blue (*Trinchiva*) and two Fiji's (*Paelae*). It really is a great blow—as they cannot be replaced—especially the Fiji's I am afraid ; I only have three of these left and they are all cocks.

Have you got criminal lunatics in England spreading poison far and wide like we have ?—if so, it is not safe to touch any grass unless you grow it yourself. The Municipal Council does it here—Poison, I mean. No doubt those Diamond Sparrows I saw are all dead now. These birds are strictly protected—there is a heavy penalty for catching one, however, it is quite all right to poison them, it seems ! The grass was the kind called " Summer " grass. All the small seed eaters—Diamonds, Sydney Waxbills, Double Bars, etc. love it—it is their main food during late summer.

R. Brown.

6 Barker Street,
Newcastle, N.S.W.,
Australia.

RECORDING THE VOICES OF CAPTIVE BIRDS

In response to my request in a paper under the above title (*Avicult. Mag.*, 69, 3, 122) for details of additional commercial gramophone records of the voices of captive birds, Mr. Allen Silver has kindly drawn my attention to two records on which bird song recorded in the famous Bremen aviary of Karl Reich is mixed with human instrumental music.

These, therefore, need to be added to the list under the side heading " GERMANY " on p. 123 (op. cit.). The details are :

REICH, KARL (*c.* 1925). " Nachtigall und Schwarzdrossel singen zur Hochzeit " and " Sang der Nachtigall-Edelkanarien ". One 10-inch, 78 r.p.m. disc, no. E.G. 1382. Electrola, Germany.

REICH, KARL (*c.* 1925). " Volkslieder-dreistimmig, harmonisch umsungen von Nachtigall-Edelkanarien der Zucht ". One 10-inch, 78 r.p.m. disc, no. E.G. 855. Electrola, Germany.

Also, Miss Valentine Britten has kindly traced a copy of the disc of which I had only limited information (p. 124 op. cit.). It too turns out to be of Karl Reich origin. The details are :

REICH, KARL (pre. 1923). " Actual Bird Record made by Captive Thrush " and on the other side " Captive Blackbird ". Both are " The property of Herr Karl Reich of Bremen, Berlin ". One 10-inch, 78 r.p.m. disc, no. B. 392. H.M.V. London.

JEFFERY BOSWALL.

PRODUCER, NATURAL HISTORY UNIT,
B.B.C. BRISTOL.

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P. Sluis

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1 lb.	3/6	½ lb.	2/–	½ lb.	2/–	1 lb.	6/–	1 lb.	4/6
3½ lb.	11/9	1 lb.	4/–	1 lb.	4/–	3½ lb.	21/–	3½ lb.	15/–
7 lb.	22/9	3½ lb.	13/6	3½ lb.	13/6	7 lb.	38/8	7 lb.	29/9
28 lb.	85/–	7 lb.	26/6	7 lb.	26/6	28 lb.	154/–	28 lb.	112/–
		28 lb.	98/–	28 lb.	98/–				

C.L.O. Rearing and Condition Food

½ lb.	1/–	14 lb.	20/
1 lb.	2/–	28 lb.	38/6
3½ lb.	5/6	56 lb.	75/–
7 lb.	10/6	1 cwt.	140/–

HEALTH GRAINS (Condition Seed)

3 oz.	1/–
1 lb.	4/6
3½ lb.	15/6
7 lb.	30/–

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A dehydrated form of green food consisting of lettuce, spinach, carrot, etc., readily taken by all birds. Packets 1/– & 3/6, also sold in bulk.

When sending for above Birdfoods please add for part cost of postage :
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Dried Flies (Chinese)	5/–	9/6
Silkworm pupae (Whole)	3/9	6/6
" " (Ground)	4/–	6/9
Dried Dragonfly larvae	6/6	12/6
Dried Shrimp (Fine, Medium, or Coarse)	2/3	3/6
Ant Eggs	13/6	25/–
Pure Dried Egg	6/6	12/6
Dried Rowan Berries (Whole)	2/9	4/6
" " " (Crushed)	3/–	4/9

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Mr. P. H. Hastings, the proprietor of the above firm, has been medically advised to retire. This very progressive business is therefore up for sale as a going concern, preferably as a whole, or will be split in two separate businesses if required.

The business comprises two freehold properties. The main building, newly rebuilt, is acknowledged the finest of its kind in the world, specially designed after long experience, by the owner, for tropical birds.

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CANDIDATES FOR ELECTION

Victor Benoidt, Avenue Teniers 3, Coq sur Mer, Belgium. Proposed by Miss K. Bonner.

Clifford D. M. Bingham, 106 Valence Road, Leicester. Proposed by A. A. Prestwich.

Robert E. Greatorex, 14 Balmoral Road, Worcester Park, Surrey. Proposed by J. H. Reay.

Roy Jeffery, Vernays, 19 Milton Road, Parkstone, Poole, Dorset. Proposed by A. A. Prestwich.

Robert Lotshaw, 1120 Davis Road, Loveland, Ohio, U.S.A. Proposed by Edward J. Maruska.

A. D. R. Owen, Cranbourne Grange, Sutton Scotney, Nr. Winchester, Hants. Proposed by Terry Jones.

Timothy Scott, 76 Berkeley Avenue, Reading, Berks. Proposed by John Nichol.

Frank G. Startup, Grove Lodge, Broadwater Street West, Worthing, Sussex. Proposed by W. B. Frostick.

Richard B. Stewart, 22 Irving Place, New York 3, New York, U.S.A. Proposed by Sir Crawford McCullagh, Bt.

Lawrence G. Taylor, 196 Hooper Street, Belgian Gardens, Townsville, Queensland, Australia. Proposed by A. A. Prestwich.

Ernest E. Wilkinson, Oxlands, 81 Thorn Road, Hedon, Nr. Hull, East Yorkshire. Proposed by A. A. Prestwich.

Robert A. G. Young, Blairlogie, Stirling, Scotland. Proposed by Terry Jones.

NEW MEMBERS

The ten Candidates for Election in the September–October, 1963, number of the Avicultural Magazine were duly elected members of the Society.

RE-ADMITTED

Russell Aiuto, The University of North Carolina, Department of Botany, Chapel Hill, N.C., U.S.A.

Edred J. L. Marshall, 102 Shirehampton Road, Westbury on Trym, Bristol.

CHANGES OF ADDRESS

William H. Davey-Richards, to Wachetone, Nursery Road Ex, Kingsteignton, Devon.

Verne Davidson, to 536 No. 169th Street, Seattle, Washington, U.S.A.

Dr. Juliette M. Eliscu, to P.O. Box 645, Joplin, Missouri, U.S.A.

Mario C. Fernandes, to Rua 15 de Novembro 144, Porto, Portugal.

P. H. Gaved, to Merrifield Farm, South Brent, South Devon.

H. J. Hempsted, to Avondale, Histon Road, Cottenham, Cambs.

H. G. Palmer, to 93 Roman Road, Birstall, Leicestershire.

R. W. L. Paton, to Mill House, Little Shrewley, Nr. Hatton, Warwickshire.

Frank H. H. Reitz, to The Wildfowl Trust, The Waterfowl Gardens, Peakirk, Northamptonshire.

Theodore D. Sargent, to Department of Zoology, University of Massachusetts, Amherst, Massachusetts, U.S.A.

DONATIONS

(Coloured Plate Fund)

	£	s.	d.
H. A. Mitchell . .	1	0	0
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For rare birds contact Baidyanath Acooli, Exporter of rare Indian animals: Post Box 12008, Calcutta 2, India.

Importers and exporters of birds of every description. Send for lists : Lakeside Foreign Bird Farm, Badgworth, near Axbridge, Somerset. Half a mile off main A 38.

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